

# ***THE IOWA WILDLIFE ACTION PLAN***

***SECURING A FUTURE FOR FISH AND WILDLIFE***

## **CHAPTER SIX**

### **A VISION FOR IOWA'S WILDLIFE IN THE YEAR 2030**

Few Iowans are aware that their state was once a land of unparalleled wildlife abundance and diversity. Early settlers discovered, however, that underneath Iowa's prairies lay the finest farmland in the world. In less than a century the prairies were plowed and with them went flocks of prairie chicken, herds of bison and elk and the cougars, grey wolves, black bear and bobcat that preyed on them. Wetlands were drained and flocks of waterfowl numbering in the millions that nested here were diminished to a tiny fraction of their former numbers. Most of the forests were cleared, the white-tailed deer and wild turkey disappeared and once-uncountable flocks of passenger pigeons became extinct. Plowing freed the prairie soil to run into once-clear waters and game fish like brook trout, longear sunfish and grass pickerel disappeared. Once a wilderness, Iowa had become home to a multitude of small family farms. Only small animals like the bobwhite quail, rabbits, squirrels and the soon-to-be-introduced ringnecked pheasant thrived.

The 20<sup>th</sup> century brought its own changes driven by the constant improvement in farming technology. Ever-larger and more powerful farm equipment; the introduction of herbicides, pesticides, plant hybrids and genetically modified crops; and Federal farm programs that have rewarded all-out production eventually made much of the state unsuitable for even farm-adapted wildlife. Numbers of bobwhite quail and jackrabbits have plummeted, pheasants are in a half-century decline and songbirds of our forests and grasslands are declining rapidly. Nearly a third of Iowa's lakes, rivers and streams are considered imperiled waters.

Wildlife conservation programs have returned adaptable wildlife like deer and wild turkey to our forests, Canada geese and Trumpeter swans to our wetlands, bald eagles and peregrine falcons to our skies, and river otters to our streams. Land conservation efforts have restored thousands of acres of grasslands, wetlands and forest. Farm programs have placed hundreds of thousands of acres of temporary conservation practices on private land.

But after a half-century of conservation, one-third of all of Iowa's fish and wildlife are considered in need of immediate conservation to stop their numbers from eventually dwindling into threatened or endangered status. A host of less-visible and specialized wildlife – songbirds, lizards and snakes, frogs and salamanders, fish, freshwater mussels and highly-fragile butterflies among others - is seriously threatened by the disappearance and degradation of their habitats. Iowa has less than 2 percent of its landscape in permanently protected wildlife habitat and managed under conservation practices. The remainder is privately held and subject to the whims of landowners as they respond to economic and social pressures. The pace of conservation efforts has not been able to keep up with the wholesale habitat destruction of the past century that still continues today. Without assistance to reverse these trends, more species will face a grim future – eventual disappearance from our state.

## **Iowa is farming country**

Barring an environmental or economic collapse of global proportions, Iowa will remain one of the world's great agricultural regions. The highest and best use of most of this landscape is in agricultural production. Nothing in this Plan suggests returning Iowa to its pre-settlement state on any but a small part of the land. The challenge for Iowans is to find a way to protect our remaining wildlife heritage and preserve a legacy for our heirs by creating viable and socially-acceptable wildlife environments within a landscape dominated by agriculture.

## **A Vision for the Future**

To establish a focus for future wildlife conservation activities, the Advisory Committee to the Iowa Wildlife Action Plan – a group of fish and wildlife professionals, educators, researchers, private conservation organizations, concerned citizens and representatives of the agricultural community - developed a vision for the status of Iowa's wildlife in 25 years. The vision statement has 6 elements that include benefits to fish and wildlife, the citizens who enjoy and support them, and the private landowners who must embrace them if the vision is to be realized. With each vision element the Advisory Committee developed specific conservation actions that need to be implemented to reach the Plan's goals in a 25-year framework.

These *vision elements* and *conservation actions* are not specifically designed to be implemented by IDNR. They are designed to provide a broad framework of actions that can be undertaken by conservationists at all levels of government, by private conservation organizations and by private citizens. Extensive coordination will be necessary between these stakeholders to make the vision a reality.

## **A Vision for Iowa's Wildlife**

***By 2030 Iowa will have viable wildlife populations that are compatible with modern landscapes and human social tolerance.***

### **Goals:**

- Common species will continue to be common.
- Populations of species of greatest conservation need will increase to viable (self-sustaining) levels.
- The abundance and distribution of wildlife will be balanced with its impact on the economic livelihood and social tolerance of Iowans.

### **Conservation Actions:**

- Develop a balanced program of wildlife conservation by increasing the emphasis on species of greatest conservation need.
- Develop scientifically reliable knowledge on the distribution, abundance and ecological needs of all wildlife species.
- Focus on protection, restoration, reconstruction and enhancement of native plant communities and wildlife habitats.
- Restore viable wildlife populations to suitable habitats through informed relocation and reintroduction programs.
- Protect ecosystem stability by developing invasive species management plans that provide early detection strategies to control exotic invasive species.
- Develop methods to identify and reduce economic and social conflicts between wildlife and citizens.

### **Explanation:**

Achieving this goal requires improving scientific knowledge about many species whose biology, abundance and current distribution in Iowa are poorly understood, particularly nongame. It may require population and habitat restoration and enhancement over a broad geographic range and the development of new management techniques to protect the interests of the private landowner. If successful, it will aid the long-term viability of all wildlife, increase biodiversity, promote greater access to wildlife-associated recreation, and provide economic benefits to Iowans.

## A Vision for Wildlife Habitats

***By 2030 Iowa will have healthy ecosystems that incorporate diverse, native habitats capable of sustaining viable wildlife populations.***

### Goals:

- The amount of permanently protected wildlife habitat in Iowa will be doubled to 4% of the state's land area.
- Protected habitats will be diverse, representative, native plant communities in large and small blocks on public and privately owned land and waters.

### Conservation Actions:

- Identify habitats, landscapes and travel corridors important to species of greatest conservation need in all regions of the state.
  - Coordinate with all government natural resource agencies and non-governmental organizations to identify areas at regional, state, and local scales.
- Permanently protect, restore, reconstruct and enhance large areas of wildlife habitat - systems that include large core tracts, watershed and greenbelt corridors, and other associated travel corridors - that can be managed for biodiversity.
  - Develop a series of core habitat blocks in the range of 3,000 - 5,000 acres of permanently protected and managed habitat.
  - Evaluate existing permanently protected areas for potential expansion.
  - Work with legislators to implement *smart growth* efforts in these designated core areas.
- Ensure that long-term Federal land conservation programs meet the needs of landowners and wildlife on privately owned lands and waters.
  - Use existing tools and create new tools to permanently protect private lands and waters and expand outreach efforts.
  - Encourage Federal land conservation programs that allow existing native habitats to be enrolled.
  - Work to mandate Federal and state wildlife agency involvement in the prioritization, design, and implementation of the Federal programs.
  - Staff a state position to coordinate wildlife priorities with all Federal land conservation programs with emphasis placed on habitats for species of greatest conservation need.
  - Integrate this Plan with existing Federal programs.
  - Expand existing Federal and State programs that focus on water quality of streams and rivers but allow flexibility for local issues to be addressed.
- Provide technical guidance and supplemental cost share programs to private landowners to maximize the benefits to wildlife from Federal land conservation programs.

- Utilize habitat developments on private land to supplement government habitat protection programs. Use USDA farm programs to improve connectivity between habitats by targeting landowners in key areas.
  - Expand IDNR's Private Lands Program efforts to meet the needs of SGCN outlined in this Plan.
  - Provide for improved coordination of all Federal, state, county and non-governmental organizations private lands programs to efficiently deliver technical assistance to landowners.
  - Provide incentives to landowners to implement practices that benefit SGCN in targeted areas. Provide additional incentives to neighboring landowners who put adjacent land into a program so larger tracts of land or corridors are created.
  - Educate all natural resource agencies staff about the Plan.
  - Create a central site for all resources of the Plan and make available to natural resource agencies and landowners.
- Coordinate public land acquisition and private land habitat programs to provide habitat on a landscape scale.
    - Use the Plan as a tool for private lands and public land natural resource protection, management and restoration efforts.

**Explanation:**

Currently only 2% of Iowa's wildlife habitats are permanently protected – 600,000 acres by state, county, or Federal ownership and 57,000 acres on private land in permanent easements. To reach the goal of doubling the amount of permanently protected habitat by 2030, protection through acquisition or easements, restoration, reconstruction and enhancement of critical habitats must be accelerated by 24,000 acres annually. Fragmentation must be minimized by developing large blocks of habitat connected by corridors for the free exchange of organisms. Landowner education and cost sharing programs must be expanded to increase the amount of permanently protected habitat on private lands and waters. Ensuring that the short term benefits provided by Federal land conservation programs are continued must be a high priority for all stakeholders as the long-term goals are pursued. Watershed and hydrologic alterations must be restored wherever necessary and feasible to benefit all wildlife.

## A Vision for Wildlife Management

***Diverse wildlife communities will be developed on public and private lands and waters through the use of adaptive ecological management principles.***

**Goal:** Wildlife and fisheries management will be based on science.

### **Conservation Actions:**

- Establish wildlife population and habitat management goals for public and private lands and evaluate their effectiveness.
- Develop and implement management plans on public and privately owned lands and waters that promote biodiversity and improve the status of species of greatest conservation need.
  - Provide coordination and implement activities that involve all in-state land management agencies (state, county and Federal) cross state lines and include the Missouri and Mississippi River systems.
  - Coordinate all Federal, state, county and NGO's private lands programs to efficiently provide management plans to landowners.
  - Implement a statewide private lands management coordination committee.
  - Educate natural resource management staff on management needs of species of greatest conservation need.
  - Develop a standard template for all public and private land management plans.
  - Acquire tools and gather reference materials and make them easily accessible to all natural resource managers and landowners.
  - Expand and create local habitat working teams to implement the plans on private and public lands and waters. Provide these teams and private contractors' incentives for equipment.
  - Expand the DNR's Prairie Seed Harvest Program to meet the demand of the state's public land managers for local eco-type prairie seed.
  - Evaluate the shallow lakes of the Prairie Pothole region to develop and implement management plans that will benefit the species of greatest conservation need.
  - Develop and implement a statewide strategy to eradicate invasive species.
- Coordinate habitat management policies and messages among all layers of government to promote goals of the Plan.
- Work with legislators to address liability issues related to landowners' usage of outside contractors to implement management practices on their land.
- Educate other government land management and protection agencies on the Plan so it may be used in conjunction with their work activities (ex. DOT, IACCB, USFWS).
- Provide funding and staff positions to carry out the actions of the Plan.

**Explanation:**

When the habitat goal is met, the vast majority of land in Iowa will still be in private ownership and used for agricultural purposes. Meeting the wildlife population goal will require intensive and carefully planned management on lands and waters protected for wildlife, whether in public or private ownership. Management for all species must be coordinated using ecological principles that can be evaluated and adapted if population or landowner objectives are not met. Landowners and conservationists must work in harmony so that environmentally sustainable agriculture is practiced and all land is managed using sound conservation practices.

## **A Vision for Wildlife-Associated Recreation**

***More lowans will participate in wildlife-associated recreation, and all lowans will have access to publicly owned recreation areas to enjoy wildlife in its many forms.***

### **Goal:**

- The number of lowans participating in wildlife-associated recreation (wildlife viewing, photography, hiking, outdoor classrooms, hunting, fishing etc.) will increase 50 percent by 2030;
- Wildlife-associated recreation will be available to all lowans on public lands near their home;
- Increasing wildlife-associated recreation will improve public health.

### **Conservation Actions:**

- Develop market-based research to determine the wildlife-associated recreational interests of all lowans, especially non-traditional users like minority and ethnic groups and citizens with disabilities.
  - Gather information through the upcoming Statewide Comprehensive Outdoor Recreation Plan (SCORP) survey
- Expand training programs in wildlife-associated recreation skills to increase citizen participation and improve public health.
  - Work with the IDNR outdoor skills committee and associated partners to complete the development of outdoor skills modules,
  - Create a network of lending sites for recreation equipment to teach programs,
  - Provide training for interested teachers, youth leaders, and other educators through formal and non-formal venues.
- Coordinate wildlife population, habitat and management goals for public lands with potential recreational uses to assure that all recreation is compatible with sound wildlife management and to minimize conflicts between users.

### **Explanation:**

Currently 1.3 million lowans participate in wildlife-associated recreation. To accommodate additional users, public access for a variety of wildlife-associated recreational uses must be assured on public and private lands and waters wherever these activities are compatible with sound management for all wildlife. Access will be improved around urban areas and in counties where it is lacking today. Outreach programs must be developed so that all lowans regardless of race or gender will find wildlife-associated recreation activities that are enjoyable and available to them.

## A Vision for Wildlife Education

***Iowans will respect wildlife for its many values and they will advocate effectively for conservation of wildlife and wildlife habitats.***

**Goal:** Iowans will understand the relationships between land use, wildlife diversity and abundance, the quality of life for all citizens, and the positive effects wildlife has on Iowa's economy.

### Conservation Actions:

- Work with stakeholders to develop consistent messages about the value of wildlife and their associated habitats that convey health, wellness, economic, and other *quality of life* benefits. (Tourism and economic development, Department of health, physicians, wellness coordinators, bank place market tours).
- Refine and expand current wildlife education efforts targeted to formal and non-formal education venues. Focus on:
  - Priorities established in this Plan,
  - Needs identified by the formal education community (e.g., through direct contact with the Iowa Department of Education and Area Education Agencies),
  - Information collected through teacher focus groups
  - Needs of other potential target audiences.
- Determine appropriate target audiences based on the overarching goals of this Plan.
  - Determine audience wants and needs through needs assessments
  - Develop appropriate informational materials and distribution venues
  - (Planned surveys include the 2005 needs assessment for SCORP).
- Secure additional staff to coordinate educational efforts across the state
  - Materials development,
  - Staff training and assistance,
  - Maintenance of regional partnerships to facilitate implementation of educational efforts.
- Develop training programs for professionals in fields that affect land use (agriculture, engineering, community planning, developers, etc.) and community leaders to inform them of the impacts of development on wildlife habitats and the quality of life for citizens on a local level.

### Explanation:

To attain these visions, political leaders must be made aware of the economic and social benefits that are achieved through scientific management of Iowa's wildlife and provide the necessary funding. Pro-active wildlife education for K-12 classrooms as well as post-secondary and adult conservation education and outdoor skills must be expanded through aggressive outreach programs. Educational programs must be developed for professionals in other

disciplines and for state, regional and community leaders that make decisions on the development and use of natural resources that impact wildlife.

## **A Vision to Fund Wildlife Conservation**

***Stable, permanent funding will be dedicated to the management of wildlife at a level adequate to achieve the visions of this plan.***

### **Goal:**

- Government (Federal, state, and county) and private conservation spending will be increased so that the goals of this Plan are reached by 2030.
- Funding will be dependable, secure, and appreciated as a powerful economic and social investment.

### **Conservation Actions:**

- Develop a marketing campaign that will convince citizens, conservation professionals, and activists in private conservation groups, community leaders and politicians that funding this Plan will be an important step in helping to solve a myriad of social and economic problems in Iowa.
- Expand membership in the coalition of traditional wildlife and agricultural groups that is lobbying Congress for Federal farm conservation programs on private land to include nongame and recreational interests.
- Develop a broad-based coalition of conservation leaders, educators, politicians and local economic interests to identify and secure passage of a permanent funding mechanism that will provide sufficient funding to meet Plan goals in 25 years.

### **Explanation:**

Achieving the visions outlined in this plan will require cooperation from public-private partnerships at all levels of government (Federal, state and local) and from all private stakeholders. Funding from all sources will have to reach a greater level than at any time in the past. Historically funding for wildlife programs in Iowa has come from hunters and anglers through license fees and excise taxes. All Iowans will receive tangible and intangible benefits when the IWAP is implemented. Presently, 25 percent of Iowans hunt or fish; another 25 percent enjoy wildlife viewing; and 74 percent say they enjoy seeing wildlife during other recreation activities. Wildlife-associated recreation generates \$1.5 billion in economic activity annually, equivalent to 16,000 jobs. Increasing wildlife habitat will reduce soil erosion, improve water quality, and reduce drinking water costs for all citizens. The costs for implementing the Plan should be borne by all citizens.

## CHAPTER SEVEN

### RESEARCH, SURVEY, INVENTORY AND MONITORING

#### General Discussion

Identifying research and survey efforts needed to restore and enhance SGCN and their habitats is one of the required elements in the IWAP. Plans for monitoring SGCN, habitats, the effectiveness of proposed conservation actions and for adapting these actions to new information or changing conditions is also required. These elements are presented in this chapter.

Although discussed elsewhere in this document, this paragraph clarifies that Iowa understands the importance of monitoring and adaptive management. Monitoring is critical to the determination of the status of species, not only those of greatest conservation need, but also the more common species. By monitoring the effects of conservation actions on wildlife, adaptive management decisions can be made to continue to improve, or to cease to harm wildlife species.

As discussed in this and other chapters, Iowa has identified, and will identify in the future, stresses to wildlife and actions that can be taken to alleviate those stresses. Performance measures for the actions have been outlined, and additional measures may be selected in the future as other stresses become apparent. Often, these measures are less obvious than the response of wildlife, but may be more oriented toward the opinions of the public or the success of education programs. However, all measures will be of utmost importance to the success of the IWAP. Following the adaptive management paradigm, should these measures indicate that an action is not working (whether the measure is the public perception of the importance of wildlife or the number of reproductively active small mouth salamander populations), then other actions will be evaluated until an appropriate response is found.

The lack of species-specific information on the abundance and distribution of SGCN was one of the greatest challenges faced in developing this Plan. In some cases species were added to the list simply because information was outdated or unavailable. In spite of the problems identifying fine scale habitats and qualitative differences, the amount and distribution of potential wildlife habitat is comparatively well known.

For clarity, *inventory, survey and monitoring* are defined as (Thompson et al. 1998):

- **Inventory** - Process of making an itemized list of species occurring within a given area.
- **Survey** - An incomplete count of individuals, objects, or items within a specified area and time period.

- **Monitoring** - A repeated assessment of some quality, attribute, or task for the purpose of detecting a change in average status within a defined area over time.

Long-term monitoring programs give the best picture of the status of wildlife populations over time. Well-designed short term surveys and inventories can indicate the current status and distribution of wildlife but are often valid only in the area where they are conducted and may quickly become obsolete if habitat or other critical factors change. In Iowa the rapid change in habitat availability on agricultural lands as USDA farm programs change is a frequent example.

Appendix 21 contains a partial list of individual wildlife monitoring, survey and inventory projects conducted in Iowa over the past 45 years. A summary is provided in Table 7-1. Many other research studies too numerous to list have provided information on the presence of individual species or groups of species.

**Table 7-1. Summary of Wildlife Monitoring, Surveys and Inventories Conducted in Iowa: 1960-2005.**

Taxonomic Class	Long Term Monitoring			Short Term Surveys & Inventories		Total
	Populations		Harvest	Populations		
	Game	Nongame	Game	Game	Nongame	
Birds	9	14	3 <sup>1</sup>	0	2	28
Mammals	1	2	2	2	24	31
Reptiles & Amphibians	0	2	0	0	7	9
Land Snails	0	0	0	0	1	1
Butterflies	0	0	0	0	?	0
Fish	1	4	1	13 <sup>2</sup>	2	21
Mussels	0	2	0	0	4	6
Damselflies & Dragonflies	0	0	0	0	2	2
Total	11	24	6	5	52	98

<sup>1</sup> Plus one harvest survey that includes 2 mammals and 5 birds

<sup>2</sup> Both game and nongame fish are surveyed.

Virtually all monitoring programs have focused on game species, T & E species, common bird surveys (e.g., Breeding Bird Survey), and evaluations of wildlife restorations. (Recall that game animals make up only 15% of the species considered in this Plan). Birds, mammals, and fish have been studied far more than the other taxonomic classes, but most mammal work has been short term inventories.

Because of the funding available, IDNR researchers have historically worked most on game animals and fish, although that is changing (Appendix 21). Without the career-long dedication of Dr. James Dinsmore (ISU-nongame birds), Dr. John Bowles (Central College-small mammals), Dr. James Christiansen (Drake University-reptiles and amphibians) (all now retired) and their students relatively little would be known about these taxa. Recent work on butterflies and odonates is discussed in Chapter 3.

In spite of this recent change in emphasis, little information is available on the distribution and status of amphibians, small and meso-mammals, snails, butterflies, odonates, freshwater mussels, reptiles, non-game fish and many nongame birds. Iowa GAP is the most recent project to attempt to determine the statewide distribution of terrestrial wildlife. Iowa GAP produced distribution maps for 288 vertebrate species based on habitat modeling. These are habitat distribution maps, however, and are not based on current survey or inventory work. Many of the surveys listed in Appendix 21 were used by Iowa GAP to determine habitat preferences. Given the highly fragmented nature of Iowa's remnant wildlife habitat, the inability of current GIS technology to identify habitats at a fine scale or to identify qualitative habitat differences, these maps serve best as a starting point for future research rather than the providing the answers sought by the Steering Committee and Working Groups in preparing this Plan.

It should be recognized that in order to meet IWAP submission deadlines, as prescribed by Congress and the National Advisory Acceptance Team, there was insufficient time to fully develop and test the necessary monitoring programs and protocols. Therefore, the *beta* procedures described herein must be considered subject to change or revision as a monitoring system is adapted to Iowa's unique requirements.

## **What Needs to Happen?**

*The State of Iowa is in need of surveys and monitoring programs that focus on the biodiversity of the state.*

### **New Survey Needs**

The Steering Committee and the Monitoring Working Group sub-committee agreed that the first priority for monitoring and research is to inventory Iowa's permanently protected wildlife habitats and a sample of habitat on private lands within the state. Virtually all wildlife specialists involved in developing this Plan expressed the need for expanded inventories, surveys, and monitoring of SGCN to guide habitat and population conservation actions. The Working Groups developed specific survey needs to fill immediate knowledge gaps (Table 7-2). These can serve as a priority list of potential survey projects until more extensive monitoring can begin.

### **Long Term Monitoring**

Tracking accomplishments of the IWAP so that political and financial support can be maintained over the 25-year implementation period is a first-order priority of the Plan. Discrete accomplishments such as funding attained, education programs initiated and presented, site-specific recreational opportunities developed, citizen participation, habitats protected, information learned from survey and research studies, etc. must be tracked and made constantly available for scrutiny by all stakeholders. A database will be developed by IDNR's Wildlife Diversity Program and made available through the Internet for stakeholder review and use.

***Future performance measure development:*** It should be understood that the stresses and actions described in this plan will most likely change over time. Although future stresses and responses cannot be predicted at this time, information gained from the current monitoring of both wildlife populations and conservation actions can serve as a fount of knowledge for future issues. When new stresses or actions arise, they will be addressed in a manner that is in accordance with this plan and the approach and steps outlined herein.

But the ultimate measure of success for the IWAP will be its impact on the wildlife resources of the state. Long term monitoring of all wildlife is necessary to demonstrate the reversal in declining trends of SGCN and to document that common species are remaining common. This can be accomplished only through application of rigorously-designed long term monitoring programs to track the status of Iowa's wildlife resources. Tables 14.1 through 14.9 in Appendix 14 list each primary habitat associated with each SGCN.

Iowa's Species of Greatest Conservation Need almost always are linked to critical habitats, which frequently are localized, degraded, highly fragmented or disconnected from similar habitats and under increasing pressure from numerous human-related threats. Figures 7.4, 7.5 and 7.6 (see the end of this chapter) offer readily recognizable examples of some terrestrial and aquatic habitats, associated SGCN, habitat stresses, suggested actions to address those stresses, possible inventory and monitoring needs and a list of suggested partners to undertake necessary tasks.

## **Who Needs to be Involved?**

If funding becomes available, a standardized, statewide wildlife survey will be implemented to provide a basic inventory of wildlife species and to serve as the initial data collection in a long term monitoring design. This program would incorporate permanent sampling sites situated on public (federal, state, and county owned) as well as private lands. Private land sampling should focus on short term protected conservation lands (CRP, WRP, FWP, TNC, INHF etc.) The IDNR should have primary responsibility for coordinating this statewide survey and monitoring program, with assistance as needed from other partners (USFWS, Iowa County Conservation Boards, ICFWRU, NGO's, etc.) This design will be based loosely on the US Forest Service's "Multiple Species Inventory and Monitoring Guide".

We intend to establish the permanent sampling locations on public and private lands. By stratifying the plot locations based upon habitat classifications, we will be able to monitor multiple SGCN associated with each habitat type. Ideally, we envision a system under which other cooperators are involved in the monitoring, perhaps on their lands. For example, the IDNR could provide training on the methods and species identification as well as providing assistance with the establishment of the permanent sampling plot (GIS, ground-truthing, etc.). The cooperators (USFWS, ICCBs, NGO's), then would ensure that the protocols were carried out by their employees or well-trained volunteers. This may mean that various NGO's, state or federal parks, and private landowner programs would need to purchase some equipment (Trail master cameras, Sherman traps, minnow traps, etc.) in addition to the time used by their staff and/or volunteers.

## **How Will Monitoring of SGCN and Their Habitats be Accomplished?**

Iowa's WAP has defined 19 habitats and 296 SGCN. The majority of these SGCN were designated as such due to the lack of information concerning their distribution and status. Therefore, Iowa has decided to follow the template established by the US Forest Service for their Multiple Species Inventory and Monitoring Program (Manley et al. 2004). In following this design, Iowa will be randomly choosing permanent sampling locations stratified by the 19 habitat classes. Within each location, field techniques will be used to document the occurrence of all taxonomic groups of animals on the SGCN list. We expect this to be a more cost efficient approach for inventory and monitoring as compared to designing and sampling locations for individual species for 3 reasons. The first reason is that, by randomly choosing areas (instead of going to known locations), we hope to increase the number of known locations for many species. The second reason is that, also due to the randomization of site selection, we should be able to use the trends in the proportion of area occupied as a surrogate for the trend in population size (MacKenzie et al. 2003 *and* 2005). A third benefit to following the multiple species design is that we will be acquiring information on all species encountered, not just a handful of indicator species. In addition to the data collected on the animal species, habitat data will also be collected at each site. This habitat data will be in addition to that assembled by the IDNR Geographic Information Systems Section (see Objective 1). All animal and habitat protocols are currently in different stages of peer review.

**Table 7-2. Short Term Survey Needs for SGCN**

<b>SGCN</b>	<b>Project</b>	<b>Lead Agency</b>	<b>Cost</b>	
<b>Fish</b>	Inventory of Channel border Fish	IDNR	\$150,000	
<b>Mississippi River</b>	Grass pickerel inventory & re-establishment in deltas	IDNR	\$60,000	
<b>Missouri River</b>	New survey of River Channel	IDNR, FWS	\$180,000	
<b>Turkey River</b>	Crystal darter inventory and habitat preference	IDNR	\$50,000	
<b>Rivers General</b>	Asian Carp River & Stream Surveys - Track			
<b>Streams General</b>	Movements	IDNR	\$80,000	
	Surveys for SGCN - Fish passage and habitat	IDNR	\$250,000	
	Identify extent of cold water streams	IDNR	\$80,000	<b>Fish</b>
	Increase range of brook trout, slimy sculpin and mottled sculpin	IDNR	\$60,000	<b>\$910,000</b>
<b>Mussels</b>	Statewide mussel survey at 10-year intervals	IDNR	\$10,000	
	Document mussel beds in Mississippi River	IDNR, FWS	\$50,000	<b>Mussels</b>
	Time frame and causes of mussel mortality in Des Moines River	IDNR	\$40,000	<b>\$100,000</b>
<b>Amphibians &amp; Reptiles</b>	Survey for T & E species	IDNR	\$10,000	
	Repeat survey of southern Loess Hills	IDNR	\$100,000	<b>Amphibians &amp; Reptiles</b>
	Mudpuppies in Mississippi and Upper Iowa Rivers	IDNR	\$100,000	<b>\$210,000</b>
<b>Birds</b>	Repeat Breeding Bird Atlas to Look for Trends	IDNR, FWS	\$250,000	
	Inventory and Monitoring on Important Bird Areas	IDNR Audubon	\$150,000	<b>Birds</b>
	Inventory and Monitoring on BCAs	IDNR, Audubon	\$200,000	<b>\$600,000</b>
<b>Mammals</b>	Statewide survey for bats	IDNR		<b>\$100,000</b>
<b>Dragonfly and Damselfly</b>	Statewide survey	IDNR		<b>\$150,000</b>
<b>Crayfish</b>	Statewide Survey	IDNR		<b>\$150,000</b>
	<b>Total Short Term Survey Needs</b>			<b>\$2,220,000</b>

## Objective 1: Current Inventory of Wildlife in Iowa.

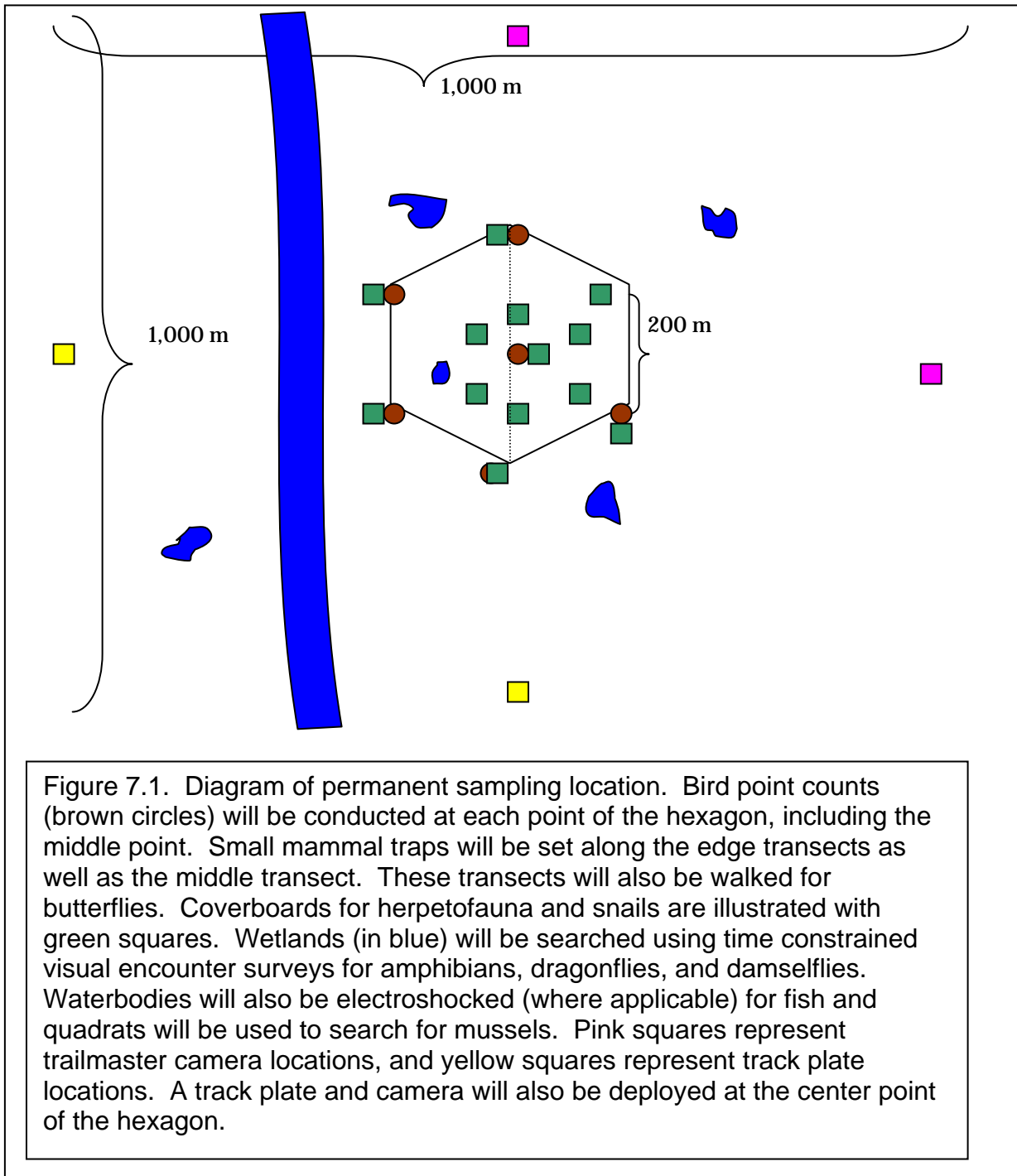
This objective is primarily concerned with estimating the statewide spatial distribution of species. Species occurrence and distribution would be derived from the use of several short-duration, high-intensity searches at a large number of areas scattered widely across the state with locations randomly chosen based on the 19 habitat classifications designated in this Plan.

The design of the inventory and monitoring protocol will provide the ability to estimate the spatial distribution and status of many species. The overall protocol will determine how widespread or isolated a species is within the state and relate distribution to the condition of habitats. Permanent sampling sites would be established within the 19 habitats identified by this Plan and many appropriate sampling protocols have been incorporated to document the occurrence of as many species as possible. This design is based loosely on the US Forest Service's *Multiple Species Inventory and Monitoring Guide* (Manley et al. *draft paper, 2005 anticipated*)<sup>1</sup>. This Guide outlines monitoring techniques for vertebrate species on National Forest Land. This design allows collection of both vertebrate wildlife data and also plant species composition and habitat data (Manley et al. 2004).

We have adapted the USFS Guide to include protocols for additional taxa on Iowa's SGCN list. Within each permanent terrestrial sampling plot, several techniques will be utilized to collect data on a wide variety of wildlife (Figure 7.1). For example, Sherman traps and Tomahawk traps will be used to catch small and meso-mammals. Point counts will be used to quantify birds. Cover boards and time constrained searches will be used to search for herpetofauna and land snails, and line transects will be walked to search for butterflies, dragonflies, and damselflies. In addition, any water bodies that fall within the sampling area will be examined using seining, or if appropriate, electrofishing for fish and timed visual or excavation surveys for mussels. We will also be convening workshops with aquatic experts to develop additional protocols for monitoring aquatic habitats.

Inventorying and monitoring fish and mussel species in aquatic habitats may need separate sampling locations and will incorporate both passive and active capture techniques. Ideally each water body located on public land would be monitored, at least in the area adjacent to public lands. Larger water bodies would be searched for fish using electrofishing, minnow traps, and netting/seining (Murphy and Willis 1996). Visual timed searches of the substrate surface will be combined with a double-sample excavation protocol for a subset of plots to determine mussel occurrence and density following Strayer and Smith (2003) and Smith et al. (2001). In addition to the information acquired on wildlife, the design will also incorporate field data collection on the plant species composition and habitat classifications within the sample sites where the wildlife protocols are implemented. This will allow us to collect information at the microhabitat scale to draw more specific correlations between species occurrence and habitat characteristics/environmental variables.

<sup>1</sup>[http://www.fs.fed.us/psw/programs/snrc/whatsnew/msim/msim\\_tech\\_guide\\_review\\_draft\\_april04.pdf](http://www.fs.fed.us/psw/programs/snrc/whatsnew/msim/msim_tech_guide_review_draft_april04.pdf)  
last accessed 4/07/05



## Inventorying Habitat

The above described habitat data collection will be done in addition to information currently collected by the IDNR Geographic Information Systems Section which periodically evaluates Landsat Satellite Imagery to compile landcover classification data (year 2002 is the last complete data set) similar to that recommended by Schoonmaker and Luscombe (2005). This allows the IDNR to track

the percentages of habitat types and, over time, changes in these percentages across the state. At this time, we anticipate this evaluation to be the primary method for monitoring changes in habitats. However, when coupled with the ground-truthing and habitat data collection which should occur at each of the permanent sampling locations, we expect to be able to discover potential problems with the GIS system and will be able to address these as they arise.

The primary parameter of interest in these designs is the proportion of habitat occupied. Simply knowing species occurrence patterns may not provide sufficient information for managing these species. MacKenzie et al. (2005) suggests that presence and absence data can be used as a surrogate for species abundance as long as the detection probability for the species can be estimated. Estimation of species abundance would require more intense sampling protocols. This design would be expected to generate less information per species because fewer sampling areas would be established due to the higher cost per sampling unit, but would examine a smaller group of species more in-depth.

## **Objective 2: Monitoring Species and Their Habitats.**

Once the initial inventory and survey has been completed, the same sites will be re-visited using the same protocols (unless we discover that these need to be revised). This set of second visits will convert the inventory into the monitoring program. Depending on funding, we anticipate that the sample sites will be visited repeatedly every 2-5 years, with a subset of sites from each habitat being sampled every year to ensure continuity. As with the inventory program, the monitoring program will have protocols to examine the plant species composition and the habitats within each sampling site.

The number of sites to be visited per year has yet to be determined and will be dependent upon both funding available and the number of sites needed per habitat class to statistically track changes in species occurrence. A factor in the decision of the number of sites to be visited per year will depend upon the percent change (increase or decrease in species occurrence) prudent for determining the status of wildlife populations within Iowa. To detect a smaller percent change, we would need to monitor more sites (Manley et al. 2004).

Data collected within the monitoring program will determine the change in area occupied by a given species (whether sites are being colonized or populations are going extinct) (MacKenzie et al. 2003), the change in the spatial distribution of species, changes in community composition, and changes in habitat. We anticipate that knowing both changes in habitat and changes in species occurrence will allow for inferences to be drawn about correlations between the two. We emphasize, however, that this would be the impetus for future research as opposed to definitive conclusions.

Field technicians will be under the direction of the IDNR or cooperators, as either paid technicians, summer interns through universities, or well-trained volunteers. Data analysis will be conducted by the IDNR. All field technicians will undergo training that will include species identification and handling techniques, habitat classification techniques, and other training specific to the data being acquired.

### **Data Management and Archiving**

Currently the state of Iowa has no central location for data deposition. In the past, this information has either been deposited at individual universities and small colleges or left to the knowledge of the individual who collected the data. Many schools in Iowa are no longer hiring natural history professors and the positions traditionally held by those retiring individuals are being re-filled by physiologists or geneticists that happen to work on a given taxonomic group. To insure continuity, a central natural history database should be established that would include information on the fauna and flora of the state, as well as water quality data. Such a database would allow IDNR staff and researchers from universities and other agencies access to previously acquired information quickly and easily. The database would include information on animal species occurrence with GPS coordinates, numbers, size, and condition in an easy to search format. It could be maintained by a new permanent position created within the IDNR or it could be contracted out to an individual or company with oversight from the IDNR.

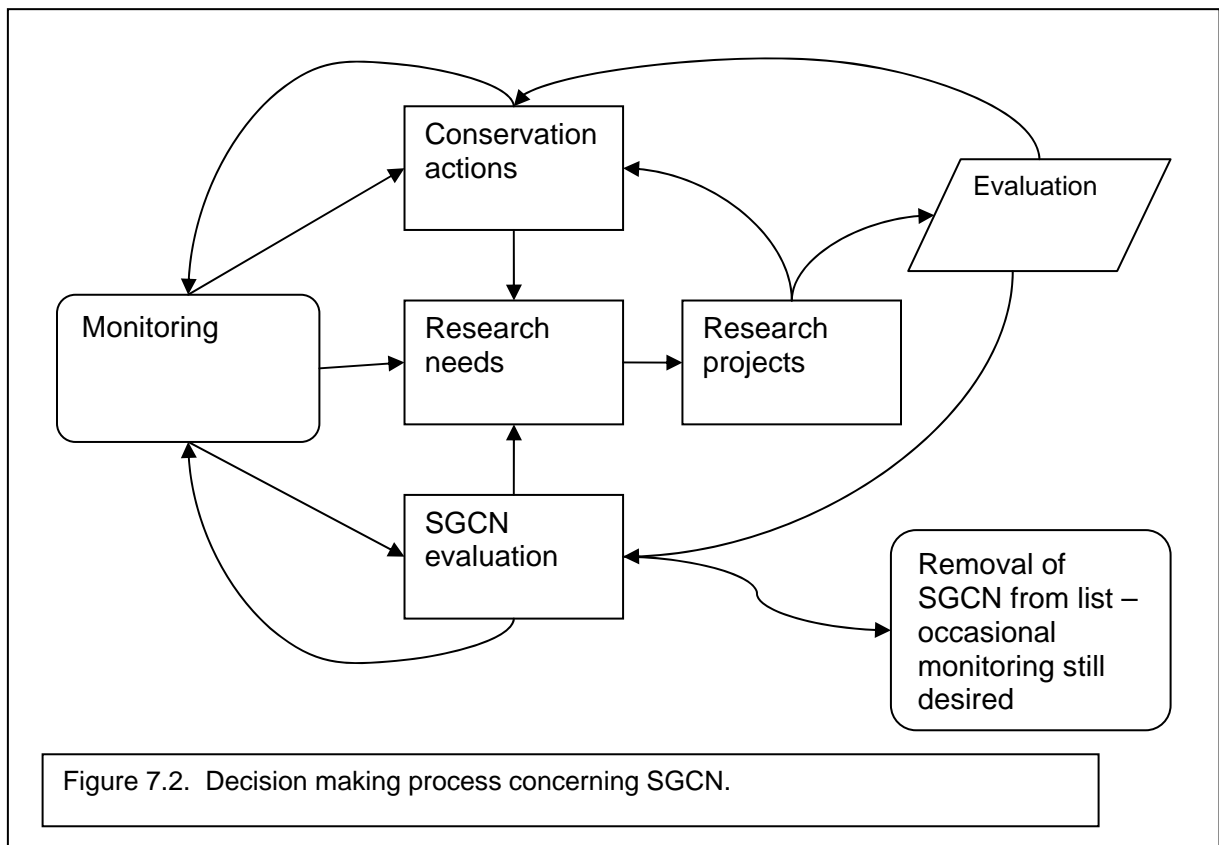
However, Iowa is also committed to using the US Geological Survey/NBII Natural Resource Monitoring Partnership monitoring locator database ([http://biology.usgs.gov/status\\_trends/nrmp/MonitoringPartnership.htm](http://biology.usgs.gov/status_trends/nrmp/MonitoringPartnership.htm)) (last accessed 2/3/2006). The goals of this partnership are to improve the accessibility of monitoring efforts to resource managers to aid in decision making for multiple purposes at multiple scales. The main components of this database are a library for protocols in use across the US and also a GIS application to aid in locating on-going and historical monitoring projects. While this database will not house the actual data associated with a monitoring project, it will allow an interested party to contact the monitoring project leader to share information.

### **Reporting, Periodic Review, and Evaluation**

The monitoring protocol will undergo a peer review process prior to implementation. Once implemented, the protocols will undergo an internal review every 1 to 2 years and if problems are noticed, advice will be sought from outside sources (e.g. university faculty and non-government organization scientists). In addition to the IDNR review, information from the monitoring program will be presented at the cooperator's meetings. Results from the monitoring program will be reported in regular progress reports, beginning with an "Inventory Assessment" once the initial round of the program has been completed and the data has been analyzed. At this time any problems encountered with the data collection protocol will be addressed and specific directions for research recommendations will be suggested. The first report, and those that follow, will be made available to the public through the IDNR website. It may be possible to test the validity of using indicator species by

examining the results of certain species individually from data collected through the monitoring program. Therefore, periodic internal and external peer review would become even more critical. An additional benefit that will result from periodic review will be the opportunity to evaluate current objectives and establish new objectives and goals of the program.

We do expect that some species may be completely missed by the inventory and monitoring programs but believe that the information gained on a large number of species outweighs this short-coming. Once we know exactly which species are not being adequately monitored, it would be prudent to advertise for proposals to do true research projects with these animals. Scientists would compete for a pre-determined amount of money associated with the research budget of the Plan. Figure 7.2 illustrates how we envision the decision making process concerning SGCN research and action needs to progress.



### Additional Benefits

While stressing that at this time, the critical objective of this program is to determine statewide distribution and population statuses for as many species of concern as possible, there are additional potential objectives of the inventory and monitoring plans which may be able to be addressed through the monitoring data collection. These included the following (Objectives 3-5):

### **Objective 3: Strengthening Vertebrate GAP Models.**

The Gap Analysis Program predicted species occurrences based upon given habitat classification and locations throughout the state of Iowa. At the present time, the GAP models are only available for birds, mammals, amphibians, and reptiles. Aquatic GAP models for fish are presently being developed but will not be completed before this plan is finalized. Aquatic GAP models will be incorporated in future planning efforts. The terrestrial models were created by the use of a combination of range maps and Wildlife Habitat Relationship models, which used 25 ancillary data characteristics (e.g., wetland buffer area, ecotone intersection areas, soil type, highway, elevation) combined with the 29 landcover classes (e.g., eastern red cedar forest, pine forest, evergreen forest, artificial high vegetation, artificial low vegetation, open water (from page 18 of the *Iowa GAP Report*, Kane et al. 2004)) to create predicted areas of occurrence for birds, mammals, amphibians, and reptiles.

To strengthen the models, the study site habitats could be classified into landcover areas within the predicted ranges would be further stratified using the GAP ancillary data characteristics. Ideally, we will have data collected as part of the monitoring program for each species for which GAP models were created. Information from the monitoring program will include geographic locations, species occurrence probabilities, and habitat classifications, which can then be compared against the original GAP models to determine accuracy. Alternatively, this data could be used to change the model predictions if a GAP round 2 was initiated.

### **Objective 4: Impact and Stress Assessment.**

The third element in the Plan includes the descriptions of problems which may adversely affect species of greatest conservation need, and priority research and survey efforts needed to identify factors which may assist in restoration and improved conservation of these species and their habitats. Therefore, the impact assessment objective would primarily be concerned with estimating the impact of stresses chosen by the state biologists and other experts.

A passive approach to this objective would involve recording impacts that may occur within study sites while the monitoring program is on-going and correlating these impacts to changes seen with species population occurrence. It may be prudent to then initiate specific research projects on these areas to examine the result of the impact.

A more research oriented experimental sampling design for this objective would be to measure species presence, diversity, and/or populations in areas of 1) habitats lacking the specified stress, 2) areas where steps have been taken to ease/prevent the stress, and 3) areas where the stress is allowed to go forward un-impeded. It may be possible that this can be accomplished within the framework of the long-term monitoring program.

This objective and Objective 5 address the consequences of specific impacts and therefore, will require more intensively designed protocols. Species occurrence alone may not be sufficient to determine the impacts of the stress or the management programs.

### **Monitoring the Effectiveness of Individual Conservation Actions**

The IWAP lists a total of 28 actions to address the 6 visions of Iowa. A handful of these can be measured through scientific research, others will need to be measured through sociological research and public opinion. For example, the management actions (e.g. restore native plant communities and wildlife habitats; reintroduction programs for wildlife species; invasive species management) can be monitored through before and after, control and impact studies (see objective 5). To a somewhat less scientific extent we can also evaluate the progress made in protecting large areas of habitat (under the Creating Healthy Ecosystems vision) by inventorying new land acquisitions and habitat acres and also by monitoring the SGCN on private lands enrolled in conservation easement programs.

However, other actions, (e.g. market-based research to determine wildlife recreation interests; developing consistent messages about the value of wildlife and their habitats) may represent less-tangible goals as far as determining the effectiveness of the actions for wildlife populations. In regard to these actions, we must somehow monitor public opinion and decide what level of public support constitutes effectiveness.

### **Objective 5: Evaluation of Management Protocols and Restoration Programs (*ADAPTIVE MANAGEMENT*).**

Regardless of what management protocol is followed, i.e. burning, logging, re-planting, mowing, grazing, or the prevention of any human alterations, different species will be expected to respond in different ways. Within each management unit, it may be critical to evaluate the results of management decisions on specified groups of species. This already is underway for selected public wildlife areas, with projects to evaluate the effects of patch-burn grazing at a major grassland landscape for prairie-chickens and other SGCN in southern Iowa, and to evaluate avian SGCN use of restored or recreated prairie and other grassland types in northern Iowa's prairie pothole region.

Most likely the same protocols and procedures would be used for this objective as for Objective 4. However, as these impacts would result from planned management programs, this could be addressed by manipulative experiments or more formal applications of adaptive resource management protocols. Ideally, data would be collected for several years pre- and post-implementation. Again, if species occurrence (or possibly abundance) was the parameter of interest, it may be possible

to address this objective within the monitoring program, however, if more specific question arise, (e.g. – the effect of restoration on survival rates of a given species) then a more intensive sampling regime may be required.

Once the data has been analyzed, then decisions as to the effectiveness of the actions studied can be made. Through this process of adaptive management, we can decide whether the action should be continued to be utilized or not. If it has been determined that the action helped the SGCN, then the action could be implemented elsewhere. Should it be determined that the action did not help the SGCN, then that action would most likely not be implemented on other lands. Ideally, we will be able to evaluate several similar actions at one time to determine the best, most cost-effective, action for the SGCN. However, we realize that what might benefit one species may be harmful to another and anticipate that several discussions involving exactly what species we are trying to enhance will be needed to truly evaluate the effect of the action being adapted. This is sometimes described as the “trial and error” method. While not the most effective means of adapting management to the needs of wildlife, it often is the most practical when funding is limited.

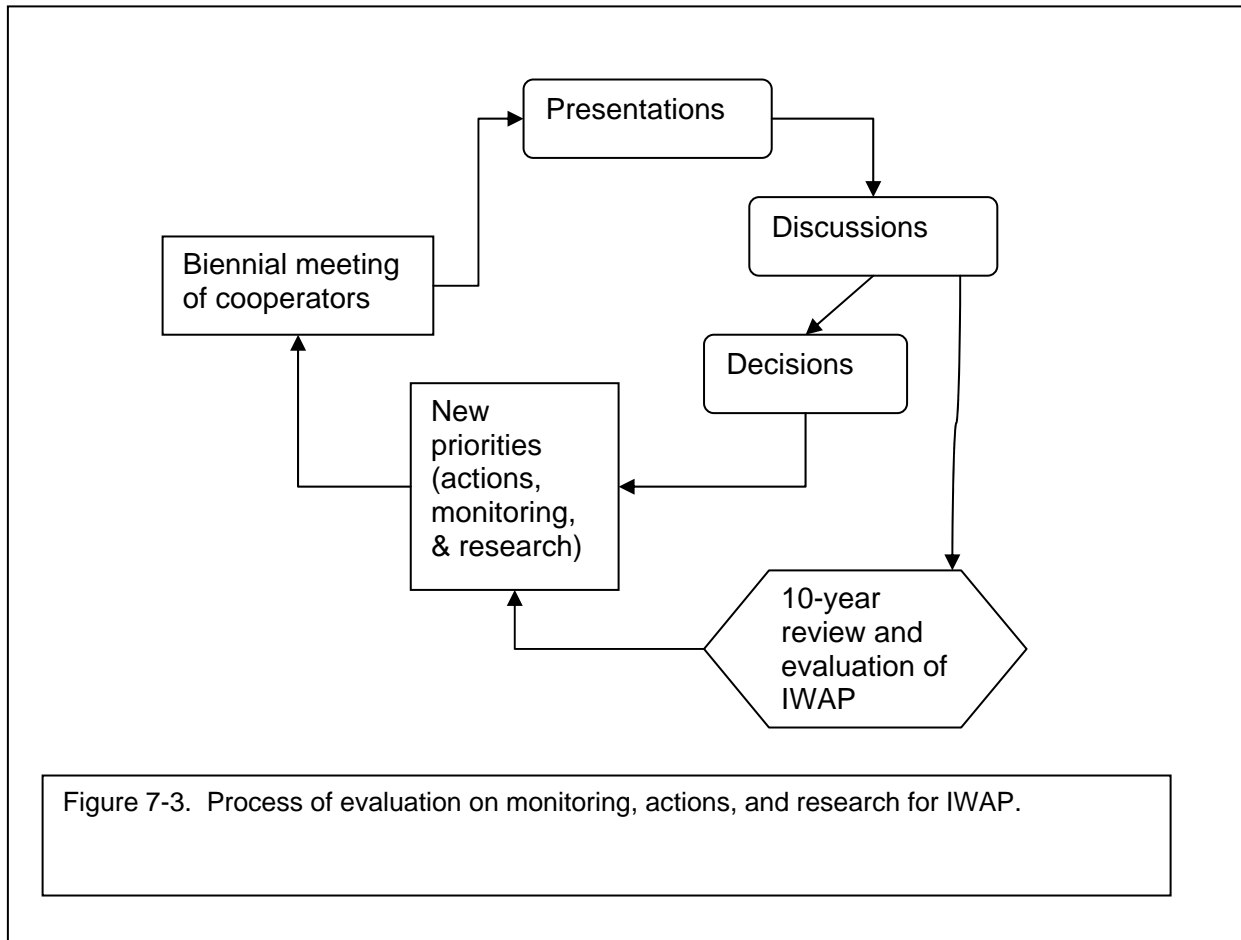
### **Research Priorities – Conservation Actions**

Statewide distribution and status information is a priority for all SGCN. Additional areas for research will undoubtedly be identified as the results of the inventory and monitoring program become available. IDNR and other knowledgeable wildlife researchers have already identified other priority projects (Tables 7-3, 7-4 and 7-5). Progress on addressing this list needs to begin even as the survey and monitoring projects are conducted. These projects should be rigorously designed from a statistical standpoint to evaluate the effect of given actions (or inactions). The ideal design would include pre-and post- treatment data collection on wildlife in affected sites as well as control sites. These projects will be prioritized and a subset will be funded each year funds are available.

### **Adapting Conservation Actions in Response to New Information or Changing Conditions**

Iowa will use new information or changing conditions (e.g. money, politics, environmental catastrophes) to adapt our conservation actions by meeting with all collaborators at least every other year beginning in 2007 with a formal conference including scientific presentations of on-going or recently completed research and monitoring projects in addition to round-table discussions to address new information and changing conditions. Issues which warrant immediate attention (e.g. a 100-year flood occurring, resulting in the need for urgent research into a SGCN dependent upon floodplains for nesting purposes) can be decided at that time or at any time by the Implementation Team (see Chapter 9).

In addition to the bi-yearly meetings, a formal review of the IWAP will be conducted every 10 years (see Chapter 9, IWAP Review). This review will include a review of the achievements, the status of wildlife and habitats, stresses that have been resolved or have intensified, the public's acceptance of the IWAP and its achievements. Figure 7.3 illustrates this process.



## Research and Monitoring Costs

Estimated costs for the research, survey and monitoring programs recommended in this chapter are summarized in Table 7-6. Costs are estimates based on similar studies undertaken in Iowa or surrounding states. Priorities are difficult to establish until the amount and timing of funding available to address research needs becomes known. Costs for some short term survey projects Table (7-2) could be absorbed by the long term monitoring program if that becomes a reality. Some of the individual research studies could be combined to maximize efficiency and reduce overall costs if sufficient funds are available for expanded work. Costs listed in the tables for research and short term surveys are assumed to end when studies are complete.

**Table 7-3. Land Management Research Needs**

Project	Description	Lead Agency	Estimated Cost
Restoration And New Habitat Projects	<ul style="list-style-type: none"> <li>-Identifying faunal differences between native and restored sites (prairie, wetland, savanna)</li> <li>-Feasibility of introducing missing species</li> <li>-Sources for amphibian and insect colonizers in restored sites</li> <li>- Effectiveness of nitrate removal .in restored wetlands</li> <li>-Coldwater stream fish species restoration</li> <li>Warmwater stream aquatic species restoration</li> </ul>	IDNR- Universities	\$1,000,000
Effect Of Prescribed Fire	<ul style="list-style-type: none"> <li>- Exclusion of fire suppression on native grasslands and forests</li> <li>- Effect of fire on butterflies</li> </ul>	IDNR - Universities	\$200,000
Effect Of Public Land Crop And Grazing Rotation	<ul style="list-style-type: none"> <li>- Pre- and post- management study to address impacts on SGCN</li> <li>- Effect of mowing/grazing on butterflies.</li> </ul>	IDNR - Universities	\$160,000
Timber Harvest	<ul style="list-style-type: none"> <li>- Impacts of timber harvest to create early successional habitat and maintain prairies and savannas (Pre- and post-management studies - neotropical migrants and ruffed grouse, etc.)</li> <li>-Are Iowa forests sources or sinks for interior forest nesting birds like the cerulean warbler?</li> <li>- Determining a sustainable deer density that balances public demand with impacts on forest birds and other taxa.</li> </ul>	IDNR - Universities	\$250,000
Goat Prairie Management	<ul style="list-style-type: none"> <li>-Impacts of tree and shrub encroachment on goat prairies and sensitive species (e.g. timber rattlesnakes)</li> <li>- Value of microsites to the status of butterflies and other wildlife.</li> </ul>	IDNR - Universities	\$50,000
CRP	Do the CRP seedings and other management techniques really affect wildlife? (Grass vs. grass/forbs mix, disking, etc.)	IDNR - NRCS	\$50,000
Wind Turbines	<ul style="list-style-type: none"> <li>-Wind turbines - Effects on nesting success of breeding birds?</li> <li>-How can wind turbines be modified so they will not cause bat mortality?</li> </ul>	IDNR - Universities	\$80,000
Land Acquisition	<ul style="list-style-type: none"> <li>-How large must core tracts be to conserve species with minimum viable population sizes?</li> <li>- Pre and post effects of land management techniques.</li> </ul>	IDNR – CCBs - USFWS	\$150,000
Farming practices	Impacts of different farming practices (e.g. organic vs. chemical fertilizer) on songbird and herptile populations	IDNR - Universities	\$40,000
Canary grass removal practices	Effects of water level management versus herbicide, and manual removal of canary grass on wildlife.	IDNR	\$20,000
<b>Total Land Management Research Cost</b>			<b>\$2,000,000</b>

**Table 7-4. Wildlife Species Research Needs**

<b>Project</b>	<b>Description</b>	<b>Lead Agency</b>	<b>Estimated Cost</b>
Carp	Impacts of carp on SGCN in shallow lakes- Management techniques for controlling carp in shallow lakes	IDNR	\$275,000
Eel ladders	Develop eel passage structures for Mississippi River locks and dams	IDNR - Universities	\$200,000
Prairie chickens	-Impacts of trees on predations on leks (How many? How far?) - Minimum-area habitat size required for a self-sustaining population	IDNR - Universities	\$200,000
West Nile Virus	-Occurrence, frequency and impacts on birds	IDNR - IDALS	\$150,000
Snakes	- Can created hibernacula help reverse snake population declines?	IDNR - Universities	\$50,000
Birds of prey	-Habitat and prey preferences of migratory birds of prey -Measure the impacts on game species	IDNR - Universities	\$100,000
Fish	-Reproductive needs of paddlefish and grass pickerel	IDNR	\$50,000
Ruffed grouse	-Habitat suitability and habitat use in NE Iowa - Use of aspen & other early successional habitat.	IDNR - Universities	\$300,000
Reptiles & Amphibians	-Habitat status and use by all Iowa Herps (Priority on state and Federal T & E species) - Impacts of public land management on Herps.	IDNR - Universities	\$175,000
Ornate box turtle	Population assessment in the Loess Hills	IDNR - Universities	\$50,000
Plains pocket mouse	Population analysis and habitat use in the central and southern Loess Hills	IDNR - Universities	\$50,000
Prairie butterflies	-Habitat components and obligate host plants for selected declining species	IDNR - Universities	\$100,000
Rare fish	-Habitat and water quality requirements of rare fish on the Lower Cedar River	IDNR - Universities	\$50,000
	<b>Total Populations Research Cost</b>		<b>\$775,000</b>

**Table 7-5. Area-Specific Research Projects**

<b>Project</b>	<b>Description</b>	<b>Lead Agency</b>	<b>Estimated Cost</b>
Headwater streams	-Community composition and impacts of agricultural runoff	IDNR - Universities	\$175,000
Missouri River	-Long term monitoring plan similar to that on the Mississippi River.	IDNR - FWS	\$1,000,000
Identify critical habitat components	-Landscape factors affecting SGCN (structural features, landscape configurations, amount of habitat) -breeding and migratory birds	IDNR - Universities	\$800,000
GIS and landscape modeling	Continue development Grassland Bird Conservation Area Model to identify geographic focus areas for habitat protection, restoration, and management	IDNR - PIF	\$25,000
Investigate interactions among birds, other animals and flora	What is the relative importance of disease, predation, nest parasitism, introduced species, land use, and abiotic factors such as climate change?	IDNR - Universities	\$800,000
Sinkholes feeding ATS slopes	ATS slopes with rare and endangered species need to have the sinkholes mapped for protection. Data should be collected at these areas to abate potential pollution or blockage.	IDNR	\$50,000
	<b>Total Area-Specific Research Cost</b>		<b>\$2,850,000</b>

**Table 7-6. Estimated research and monitoring costs.**

<b>Project</b>	<b>Description</b>	<b>Cost<sup>1</sup></b>	<b>Occurs</b>
<b>Surveys and Monitoring</b>			
Short Term Surveys	Table 7-2	\$2,220,000	Project Duration
Long Term Monitoring		\$2,000,000	Annually
<b>Research</b>			
Land Management	Table 7-3	\$2,000,000	Project Duration
Species Management	Table 7-4	\$775,000	Project Duration
Area-Specific	Table 7-5	\$2,850,000	Project Duration
<b>Total</b>		<b>\$7,845,000</b>	Project Duration
		<b>\$10,000,000</b>	5-Year Monitoring

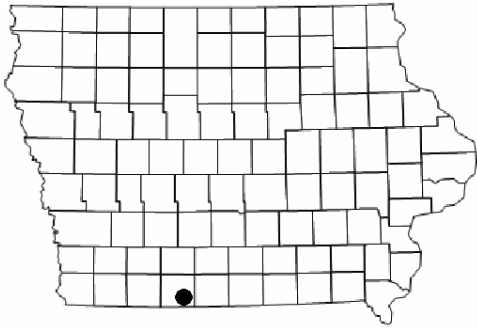
<sup>1</sup> Costs are based on 2005 dollars. Costs are estimates by the Plan author and Steering Committee. Costs may be revised depending on the amount and timing of funding for IWAP.

The biggest unknown is the cost for the long term monitoring effort. Preliminary estimates based on field tests (funded under Iowa State Wildlife Grant Study T-4-P-1) are that each sampling site will cost about \$4,000 for the multiple species sampling that will occur. A minimal goal would be to complete the initial round of survey and inventory work in 5 years. This would produce the first-ever statewide view of the status and distribution of all wildlife species. At that time the potential of the project to become a long term monitoring program will be evaluated and adjustments implemented if any are needed. To make this a reality would cost \$2,000,000 annually for field surveys, or \$10 million for the initial 5 years. Experience and data gained from the initial years of the project may increase or decrease this cost.

## Fig. 7.4. Examples of Iowa Habitats and SGCN

Habitat: **Warm Season Herbaceous Vegetation**

Location: Grand River Grasslands, in southwestern Iowa



Roger Hill photo

Description: A region of southwestern Iowa in which the landscape is dominated by grasslands (~70%), primarily tame grass pastures, tame grass Conservation Reserve Program (CRP) lands, with scattered remnants of tallgrass prairie and oak savanna.

Example Associated SGCN: \*\* = Key species (also pictured above)

- Northern harrier (*Circus cyaneus*)
- Greater prairie-chicken (*Tympanuchus cupido*)\*\*
- Short-eared owl (*Asio flammeus*)
- Henslow's sparrow (*Ammodramus henslowii*)
- Franklin's ground squirrel (*Seprnophilus franklinii*)
- Prairie vole (*Microtus ochrogaster*)
- Spotted skunk (*Spilogale putorius*)
- Regal fritillary (*Speyeria idalia*)
- Byssus skipper (*Problema byssus*)
- Smooth greensnake (*Opheodrys vernalis*)
- Northern prairie skink (*Eumeces septentrionalis*)

Example Habitat Stresses:

- Detrimental grazing
- Conversion to row crops
- Fragmentation and loss of connectivity
- Conversion to non-native grasses
- Fire suppression (leading to woody invasion).

### **Fig. 7.4 cont. Examples of Iowa Habitats and SGCN**

#### Example Actions to Address Stresses:

- Landowner education; cooperative “grassbanking”; patch-burn grazing (response measure then would be the amount of education programs, public opinion, the amount of grassland, and the effectiveness of patch-burn grazing systems)
- Work with landowners to re-enroll or extend CRP contracts (response measure would then be the number of landowners who re-enroll)
- Permanent protection of key connecting tracts (response: amount and location of protected tracts)
- Work with landowners to restore native flora and suppress non-natives (response: number of landowners participating AND the effectiveness of these programs by measuring wildlife response)
- Conduct periodic prescribed burns on public and private land (response: effectiveness of these burns)

#### Example Inventory, Survey, Monitoring and Research Needs

- Conduct multi-taxa baseline faunal inventories
- Track changes in grassland cover and fragmentation with remote sensing/GIS
- Research the effects of patch burn grazing on SGCN
- Identify and monitor all prairie-chicken lek sites and determine number required for population growth and stability

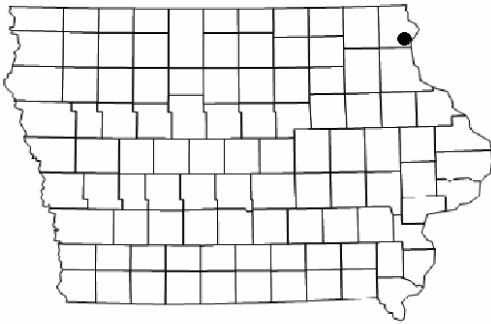
#### Possible Partnerships to Address Issues and Needs

- Iowa Department of Natural Resources
- US Fish and Wildlife Service
- US Geological Survey
- USDA Natural Resources and Conservation Service
- Missouri Department of Conservation
- Ringgold County Conservation Board
- The Nature Conservancy in Iowa
- The Iowa Natural Heritage Foundation
- Iowa State University
- Private landowners

**Fig. 7.5. Examples of Iowa Habitats and SGCN**

Habitat: **Forest**

Location: Yellow River forest, in northeastern Iowa



Doug Harr photo

Description: A region of northeastern Iowa in which significant portions of the landscape are dominated by a 60% canopy of tree species with interlocking crowns. This area is also interspersed with patches of open grassland pastures, small remnant prairies on steep hillsides, successional shrublands and row crop agriculture. Mississippi River tributary streams bisecting the area, such as the Yellow River, also host riparian forests.

Example Associated SGCN: \*\* = Key species

- Red-shouldered hawk (*Buteo lineatus*)
- Wood thrush (*Hylocichla mustelina*)
- Cerulean Warbler (*Dendroica cerulea*)\*\*
- Southern flying Squirrel (*Glaucomys volans*)
- River otter (*Lutra Canadensis*)
- Timber rattlesnake (*Crotalis horridus*)
- Iowa Pleistocene snail (*Discus macclintokii*)
- Edward's hairstreak (*Satyrium liarops*)
- Slimy sculpin (*Cottus cognatus*)

### **Fig. 7.5 cont. Examples of Iowa Habitats and SGCN**

#### Example Habitat Stresses:

- Fragmentation and loss of connectivity
- Conversion for residential use
- Timber harvest
- Fire suppression (on hill prairies)

#### Example Actions to Address Stresses:

- Landowner education (response measure: number of education opportunities and public opinion)
- Plant native trees and shrubs to fill gaps, decrease edge and restore corridors (response: amount of area restored and wildlife response)
- Limit clear cuts to less than five acres; leave seed trees and snags (response: number of cuts > 5 acres)
- Maintain mature bottomland timber stands (response: amount of land in mature stands)
- Work with county and local governments to create environmental zoning (response: number of environmental zoning successes compared to failures)
- Remove (cut/burn) invading red cedars from hill, or “goat”, prairies (response: amount of area cleared)

#### Example Inventory, Survey Monitoring and Research Needs

- Conduct multi-taxa baseline faunal inventories
- Track changes in forest canopy cover and hill prairies with remote sensing/GIS
- Identify and monitor refugia for less mobile SGCN
- Research the value of microsites to butterflies and other invertebrates

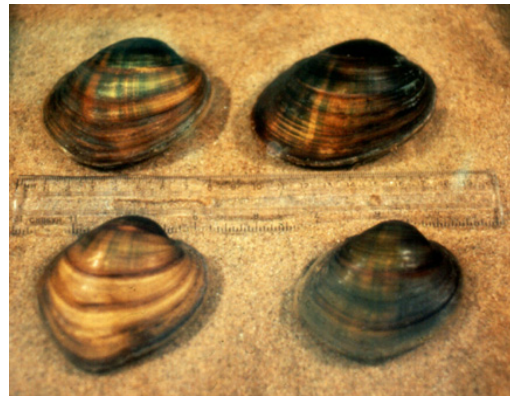
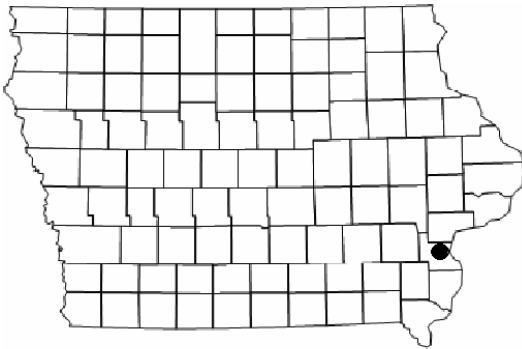
#### Possible Partners to Address Issues and Needs

- Iowa Department of Natural Resources
- US Fish and Wildlife Service
- US Geological Survey
- National Park Service
- The Iowa Natural Heritage Foundation
- Blufflands Alliance
- Minnesota Department of Natural Resources
- Iowa Audubon Important Bird Areas Program
- Iowa State University
- Luther College
- Private landowners

**Fig. 7.6. Examples of Iowa Habitats and SGCN**

Habitat: **River**

Location: Confluence of the Lower Cedar and Iowa Rivers with the Mississippi River, in southeastern Iowa



USFWS photo

Description: Large, permanent, slow-moving rivers draining major portions of Iowa, characterized by expansive floodplains with attendant backwaters, oxbows and associated saturated uplands, floodplain forests and sandy areas

Example Associated SGCN: \*\* = Key species (also pictured above)

- King rail (*Rallus elegans*)
- Prothonotary Warbler (*Protonotaria citrea*)
- Least shrew (*Cryptotis parva*)
- Yellow mud turtle (*Kinosternon flavescens*)
- Eastern massasauga rattlesnake (*Sistrurus catenatus catenatus*)
- Grass pickerel (*Esox americanus*)
- Higgins' eye pearlymussel (*Lampsilis higginsii*)\*\*
- Royal river cruiser [dragonfly] (*Macromia taeniolata*)

Example Habitat Stresses:

- Siltation
- Invasive/non-native species
- Loss of riparian habitat
- Loss of submergent/emergent plants

## **Fig. 7.6 cont. Examples of Iowa Habitats and SGCN**

### Example Actions to Address Stresses:

- Work with private landowners to control runoff through soil conservation practices (response measure: number of landowners participating vs number that do not)
- Reduce agricultural and development activities in floodplain (response: number of detrimental activities prevented vs those completed)
- Permanently protect “greenbelts” along riparian corridors (response: amount of area protected)
- Immediate removal/destruction of invasive species as encountered (response: amount of invasive species removed vs remaining)
- Public education regarding all aspects of stresses upon rivers (response: number of education opportunities and public opinion)
- Reintroduce Higgins’ eye pearly mussel glochidia into Mississippi River tributary rivers (response: number of viable, self-sustaining Higgins’ eye pearly mussel populations)

### Example Inventory, Survey, Monitoring and Research Needs

- Conduct multi-taxa baseline faunal inventories
- Monitor expansion/contraction of invasive species
- Determine habitat quality requirements of rare fish in the Lower Iowa and Cedar Rivers
- Research the reproductive needs of grass pickerel

### Possible Partners to Address Issues and Needs

- Iowa Department of Natural Resources
- US Fish and Wildlife Service
- US Army Corps of Engineers
- US Geological Survey
- USDA Natural Resources Conservation Service
- Louisa and Muscatine County Conservation Boards
- The Nature Conservancy in Iowa
- The Iowa Natural Heritage Foundation
- Iowa State University
- Private landowners

### Existing Applicable Resources

- Upper Mississippi River Evaluation and Monitoring Program
- Upper Mississippi-Great Lakes Joint Venture (Iowa revised implementation plan)

## CHAPTER EIGHT

### PRIORITIES FOR CONSERVATION ACTIONS

#### General Discussion

Choosing site-specific locations and setting definitive priorities for implementing the conservation actions identified in Chapter 6 are beyond the scope of this *strategic plan*. Few of the wildlife, habitat, and management conservation actions will be implemented, however, without a substantial increase in conservation funding in Iowa. Planning for gathering the information needed to implement the recreation and education actions should be started immediately. Education programs must be developed to inform the public about the economic, social and recreation benefits of implementing the Plan so that the political support needed to acquire the needed funding can be generated.

During the development of the Plan it became obvious that there are important gaps in our knowledge about the distribution and abundance of Iowa's SGCN and their habitats (Chapter 7: *Research, Survey, Inventory and Monitoring Needs*). More information is needed before a comprehensive *implementation plan* can be written.

Establishing priorities for the Wildlife, Habitat, and Management visions is a complex task. The IWAP establishes habitat protection, restoration and enhancement as the foundation for improving the status of SGCN. At least three different approaches need to be taken:

**1) Protect and enhance existing habitats that benefit SGCN.** This approach gives priority to areas of the state with existing habitat for SGCN or that can be suitable with habitat enhancements. Areas with the greatest existing species diversity should be targeted, land acquired or permanent conservation easements developed, and the appropriate management plans implemented. This approach is the most cost-effective way to benefit the most species in the short term. But SGCN are declining with the amount of existing habitat available today. Enhancing these habitats may slow the decline in local populations, but in the Steering Committee's view will not by itself reverse statewide or regional declines.

The greatest potential to apply this approach is for SGCN that inhabit wooded habitats and some grasslands. These existing habitats are most abundant in the Paleozoic Plateau, the southern and easternmost portions of the Southern Iowa Drift Plain, the Loess Hills, and along the interior river systems

(Map 2-2). The Southern Iowa Drift Plain has extensive acreages of mostly cool season grasslands enrolled in the short term Conservation Reserve Program that could be permanently protected and enhanced to improve habitat for SGCN. Few if any wetlands or wetland-grassland complexes exist in private ownership.

**2) Develop new habitats for SGCN in areas where these habitats do not exist.** This approach would provide new habitat for SGCN but at a higher cost. Establishing new habitats and restoring populations will extend the range of these species, provide the potential for greater genetic diversity and interaction between populations, and reduce the chances of local population extinctions if travel corridors are also provided. It will also be necessary to meet the recreation goals (50% increase in wildlife-associated recreation in areas near home).

Partnerships between IDNR, USFWS, Iowa County Conservation Boards and private conservation organizations have had many successes restoring wildlife habitats on agricultural land. Agricultural lands too steep or too wet for economical farming have been targeted for acquisition or protection, then wetlands and grasslands have been restored or grazed pastures allowed to revert to forest. Research sponsored by IDNR has shown that birds, including several SGCN, re-colonize these areas quickly. Much is yet to be learned about the ability of less-mobile species to locate these habitats and establish new populations.

Opportunities to restore habitats for SGCN exist statewide. The Des Moines Lobe currently has the greatest acreage of restored wetland-grassland complexes in the state and nearly unlimited opportunities for further conservation activities. Similar opportunities exist on a more restricted basis in the NW Iowa Plain and the Iowan Surface. Riparian wetlands can be restored along most of the interior river systems.

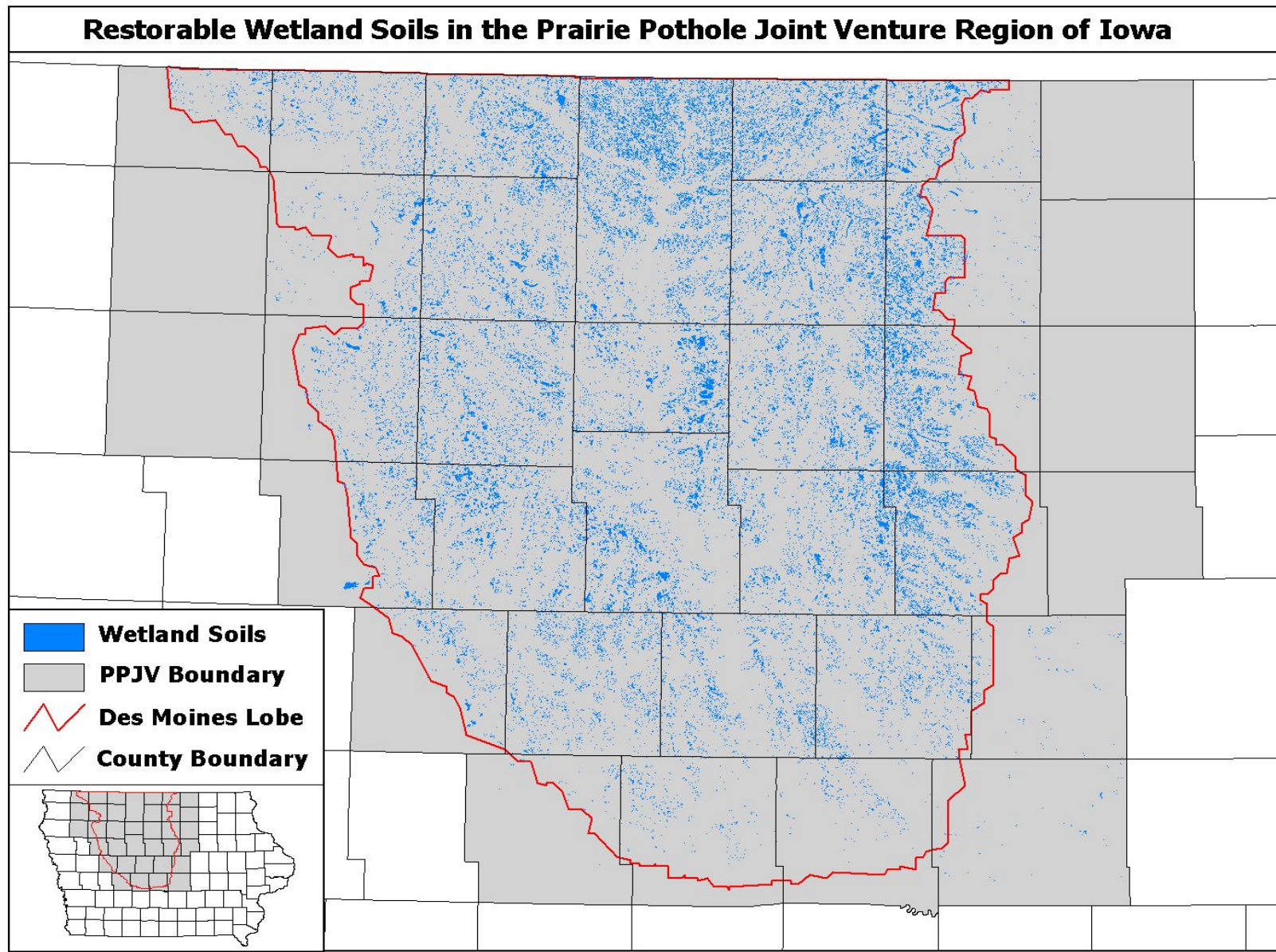
**3) Improving the status of aquatic SGCN will require a more broadly-applied conservation effort.** Habitat in rivers, streams, lakes, impoundments and wetlands can be improved only if soil erosion, siltation and all the associated problems are reduced (Chapter 5). Targeting areas to protect and restore habitats for terrestrial SGCN will help with this process but will not protect enough land by itself to help all aquatic systems. Vegetative cover must be returned to more of the landscape to hold soil in place. Existing soil-retention programs like terracing, buffer strips and no-till agriculture need to be expanded and new approaches explored to make soil conservation more widely acceptable and financially attractive to the farming community.

Targeting individual watersheds with a comprehensive conservation effort to improve the status of all SGCN and to serve as demonstration areas is the best initial approach to build support for more-widespread efforts. IDNR in cooperation with Iowa's CCBs, USDA's NRCS and FSA, Iowa Soil & Water Conservation Districts, U.S. EPA and local government entities has had success

in restoring selected watershed to provide a variety of wildlife, recreational, social and economic benefits to local communities. The most successful efforts have been in the Southern Iowa Drift Plain, but this approach can be applied selectively in most landforms.

**The Steering Committee believes a blend of all three approaches will be necessary to accomplish all the goals of the IWAP.** The plight of all SGCN in Iowa is caused by the loss of native vegetation from the landscape that provided wildlife habitat and kept soil and associated products out of the waters. Protecting existing habitats is a good strategy to prevent further losses, but it alone will not return SGCN to their former range or raise populations to a viable level. Habitats for SGCN need to be restored in socially-acceptable places. Widespread conservation practices will be needed to address water quality issues and are best approached on a watershed basis.

Map 8 - 1. Restorable Wetland Soils in the Prairie Pothole Region of Iowa



## PRIORITIES FOR VISION ELEMENTS

**Wildlife Vision:** Iowa will have viable wildlife populations that are compatible with modern landscapes and human social tolerance.

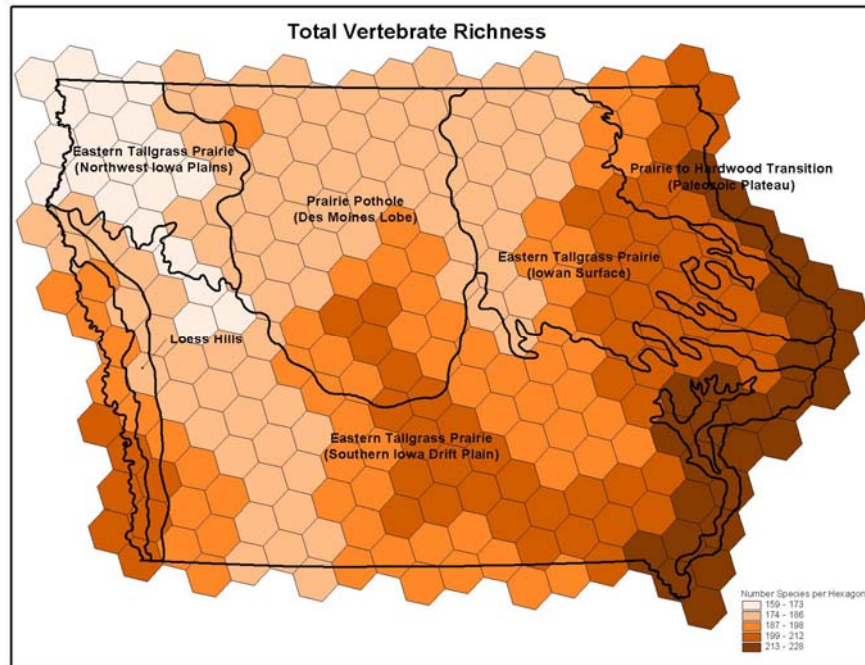
**Goal:** Common species will remain common.

Conservation activities to address the first goal should be directed to regions of the state having the greatest wildlife species diversity. Iowa GAP has produced maps that delineate regions of the state with the greatest potential *terrestrial vertebrate wildlife diversity* based on habitat distributions (Map 8-2). Hexagons shown on the species richness maps cover 635 square kilometers. Iowa has a total of 265 hexagon units either wholly or partially within the boundaries of the state.

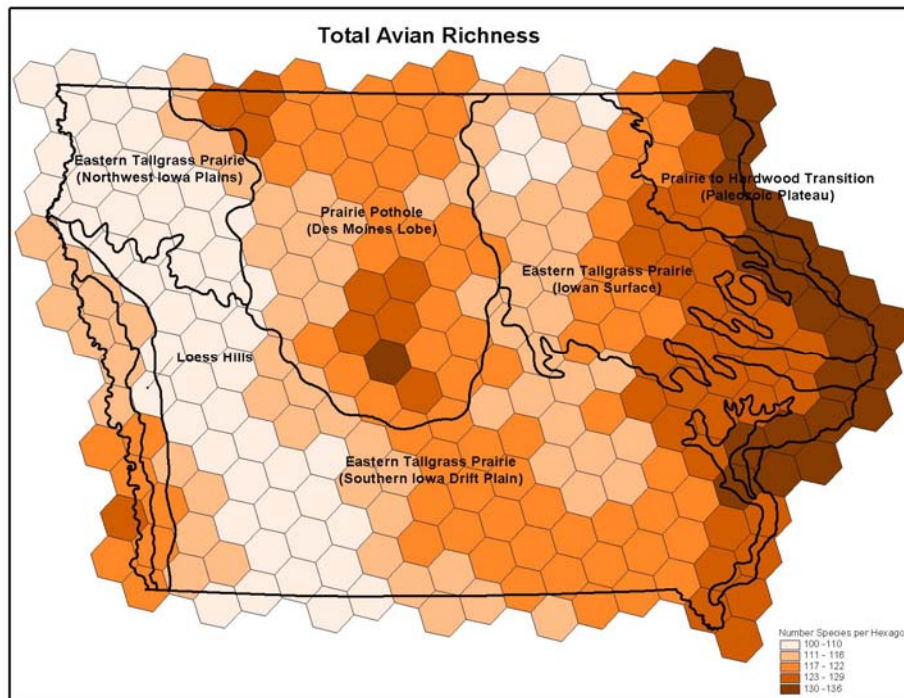
The statewide wildlife diversity map was based on individual habitat models for 288 species that were also included in this Plan. Individual species richness maps are provided for birds (170 modeled species), mammals (53 species), reptiles (44 species) and amphibians (21 species) (Map 8-3 through 8-6). Although these maps do not show distribution predictions for all Iowa terrestrial vertebrates included in the Plan, they can be used as indicators of regions of species richness for SGCN. Some SGCN may have specific habitat requirements or limited distributions that are not found within *species rich* portions of the state. The special needs of these animals must be considered when specific management plans are prepared.

The species richness maps reflect the general distribution of existing wildlife habitats. The eastern and southeastern regions of the state and the southern Loess Hills have the greatest total species diversity (Map 8-2) and the greatest diversity of birds (Map 8-3), reptiles (Map 8-5) and amphibians (Map 8-6). This may be because wooded habitats in these regions serve as major migration corridors for birds and because they contain a substantial portion of the state's remaining mixed woodland-grassland-riparian habitats. Diversity tends to decline following the interior river valleys northwest into the heavily agricultural regions of the state (formerly prairie or prairie potholes).

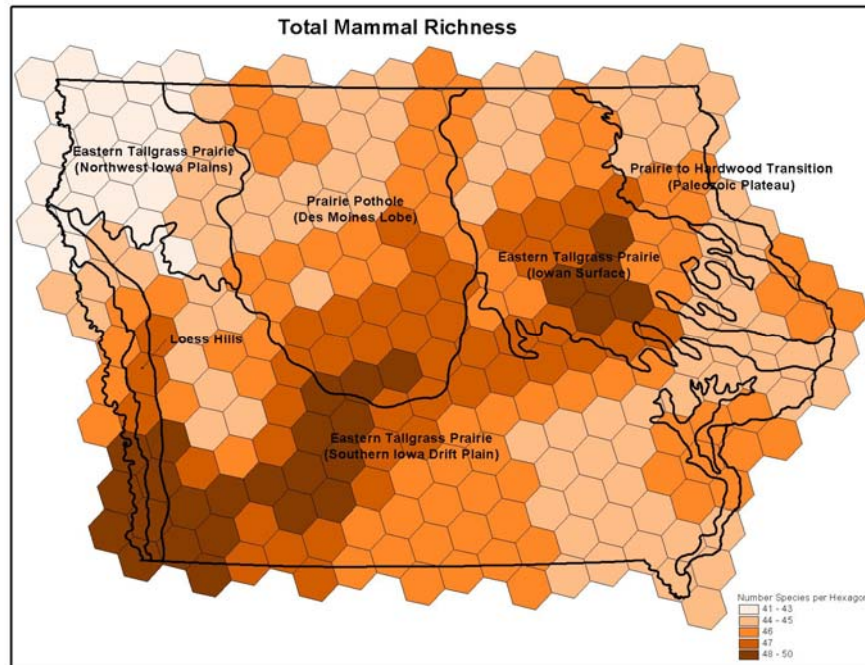
**Map 8-2. All Terrestrial Vertebrate Species Richness (from Iowa GAP)**



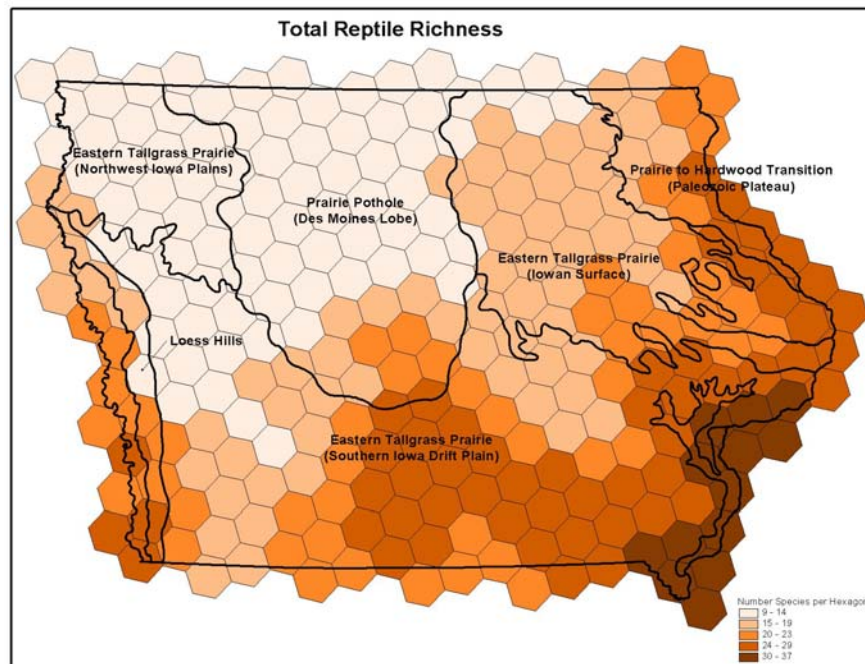
**Map 8-3. Bird Species Richness (from Iowa GAP)**



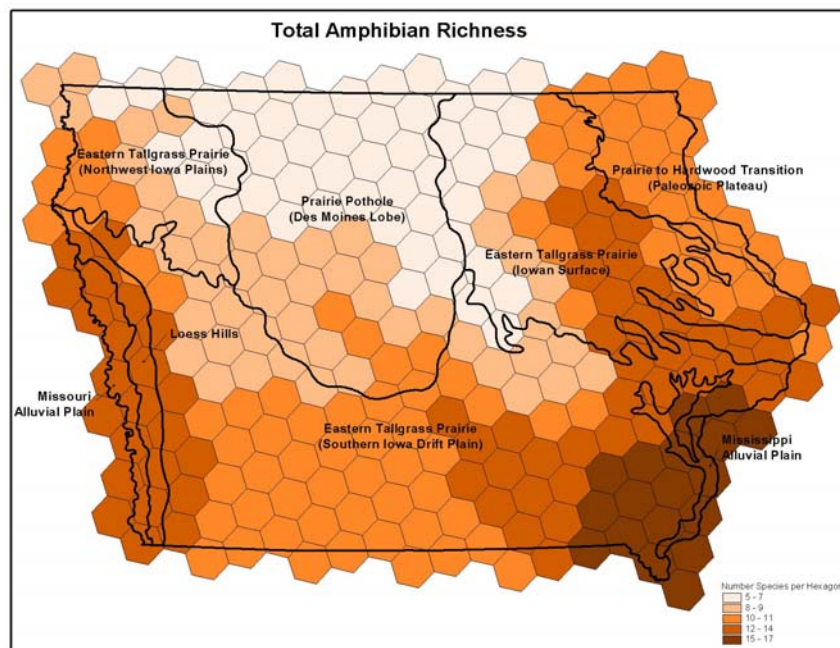
**Map 8-4. Mammal Species Richness (from Iowa GAP)**



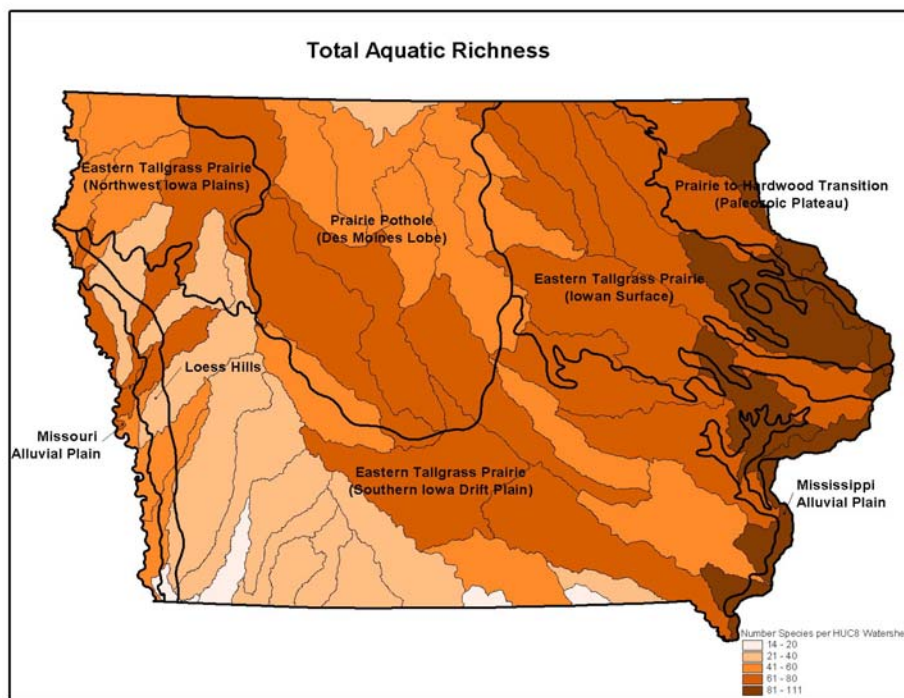
**Map 8-5. Reptile Species Richness (from Iowa GAP)**



**Map 8-6. Amphibian Species Richness (from Iowa GAP)**



**Map 8-7. Aquatic Species Richness (from Iowa Aquatic GAP)**



The exception to this pattern is the species richness of mammals (Map 8-4). Iowa GAP authors speculate that the concentration of mammal diversity in southwestern Iowa may be due to the influence of western species. Before fire suppression became widespread in the late 1800's, the Loess Hills were extensive grasslands (rather than today's forest) and probably represented the eastern extension of the range of several western species.

Iowa Aquatic GAP is being finished as this Plan is completed and can be used in future revisions to plot aquatic vertebrate species diversity. A preliminary map of 157 modeled species of aquatic vertebrates was provided to the Steering Committee for use in this version of the Plan (Map 8-7).

While these maps delineate general areas of species richness, much must be learned about the actual distributions and abundance of SGCN within these regions. Inventory and monitoring actions must take place before the needs of individual SGCN can be addressed (Chapter 7).

**Goal: Populations of SGCN will increase to viable levels**

To achieve this goal the second approach to habitat protection must be taken - creating new habitats for SGCN through land acquisition and management and by taking specific conservation actions designed to improve the status of SGCN that need more intensive assistance. This will take a combination of habitat protection, habitat management and scientific inventory and monitoring.

The habitat acquisition issues are discussed under the habitat vision goals below. The inventory and monitoring issues are discussed in Chapter 7. Once the distribution and abundance of SGCN are more fully understood, conservation actions can be tailored to their recovery. Specific habitat management prescriptions can be defined to assist key species, populations may need translocation to newly created habitats or to isolated tracts of existing habitat, connections may need to be developed between habitat blocks, etc.

**Goal: The abundance and distribution of wildlife will be balanced with its impact on the economic livelihood and social tolerance of Iowans.**

Past experience has shown that human social tolerance to wildlife must be cultivated and considered when implementing new conservation actions in a landscape dominated by private land. Expanding populations of white-tailed deer and giant Canada geese have created problems for citizens in some circumstances. Managing water levels on public wetlands during periods of

heavy rainfall have caused temporary but unacceptable flooding on adjacent private lands. Weed encroachment from public grasslands to private croplands also stirs controversy. Real or perceived, these problems need to be considered when implementing the conservation actions outlined in this Plan and steps taken to minimize impacts on neighboring landowners.

**Habitat Vision: Iowa will have healthy ecosystems that incorporate diverse, native habitats capable of sustaining viable wildlife populations.**

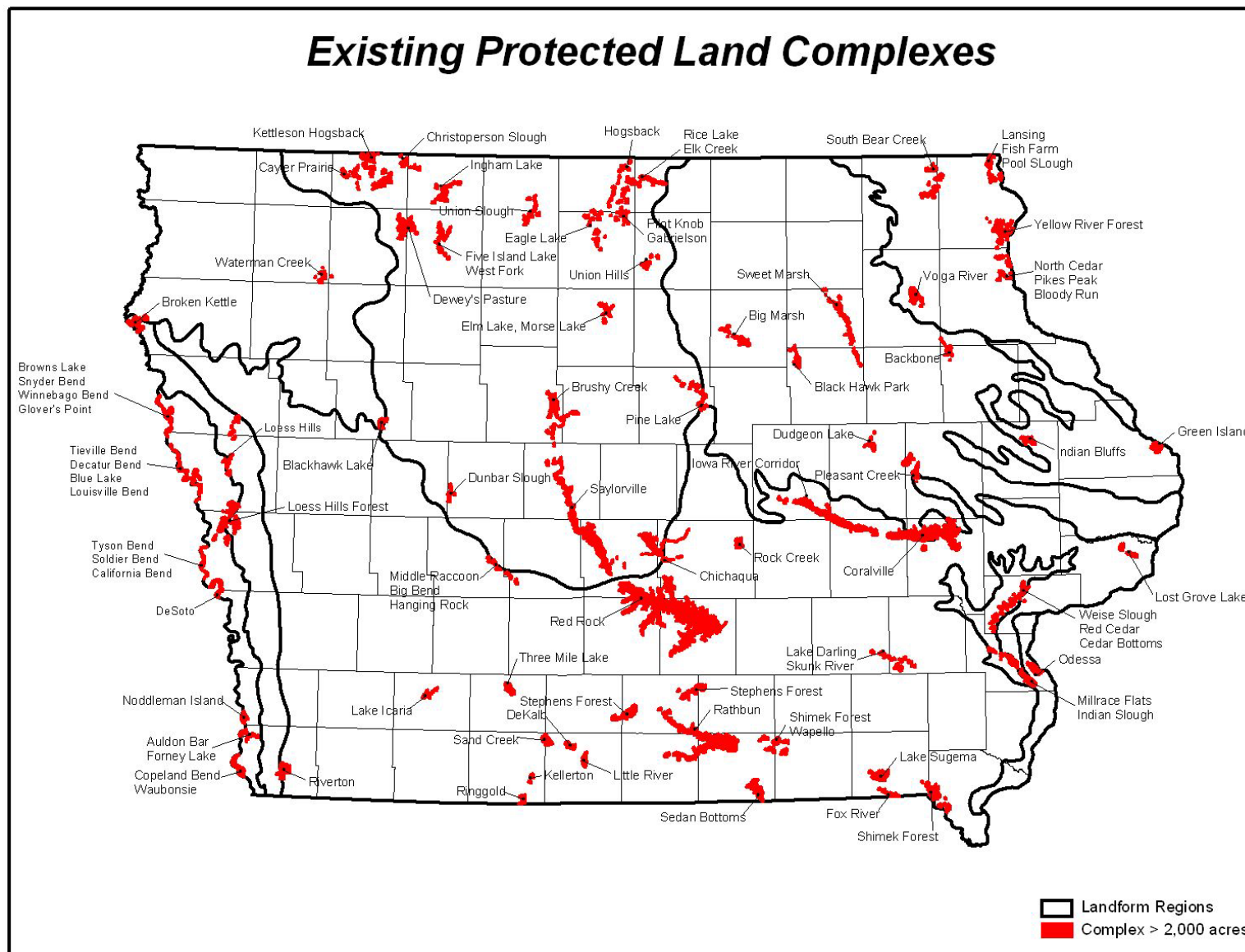
**Goal: By 2030, the amount of permanently protected wildlife habitat in Iowa will be doubled.**

Until recently land acquisition efforts in Iowa have been directed at purchasing the highest quality habitats available at the time funds were available. Too frequently this resulted in scattered small tracts of land that provided limited opportunity for biodiversity management, had little connectivity, and were difficult to manage logistically. Habitat blocks were too small to manage for more than one habitat class (e.g. grasslands or forest) on the area. If multi-species management was attempted the resulting habitat patches were too small to attract area-sensitive species. The recently developed Neal Smith National Wildlife Refuge is one notable example of a large-scale restoration (by Iowa standards) that is attempting to establish a functional tallgrass prairie ecosystem.

Since the 1980's habitat acquisitions have focused on the eventual development of major conservation areas of 3,000 - 5,000 acres in more or less continuous blocks. Experience has shown that areas of this size allow management for biodiversity between habitat classes and provide the ability to manage for multiple successional stages within one habitat class. This approach benefits multiple SGCN that need different successional stage on the same site or single species whose habitat needs change throughout the year. It also benefits game species that typically are more abundant in early successional stages as well as nongame. Partners-in-Flight has adopted a similar approach in designing Bird Conservation Areas.

Expanding existing large core conservation areas to the desired size should be given priority over work in smaller areas. Map 8-8 shows the location of existing habitat complexes of 2,000 acres or larger that are in public ownership that could reach the 3,000-acre threshold with comparative ease. These are permanently protected conservation lands owned by IDNR, county conservation boards, the federal government (USFWS - NWRs and WPAs, USACOE, NPS), the Nature Conservancy, Iowa Natural Heritage Foundation or protected under long-term federal WRP easements. Smaller scale maps of these public lands in each landform are shown in Appendix 19.

**Map 8-8. Existing Protected Land Complexes of 2,000 acres or larger**



Land (or funding) is seldom available for acquisition in blocks of this size so initial purchases in a new geographical area should be screened for expansion potential. Conservationists working in target areas to acquire large tracts must exhibit patience. State government in Iowa has traditionally relied on willing sellers to acquire or protect land. Projects of this size can take a decade or longer to complete.

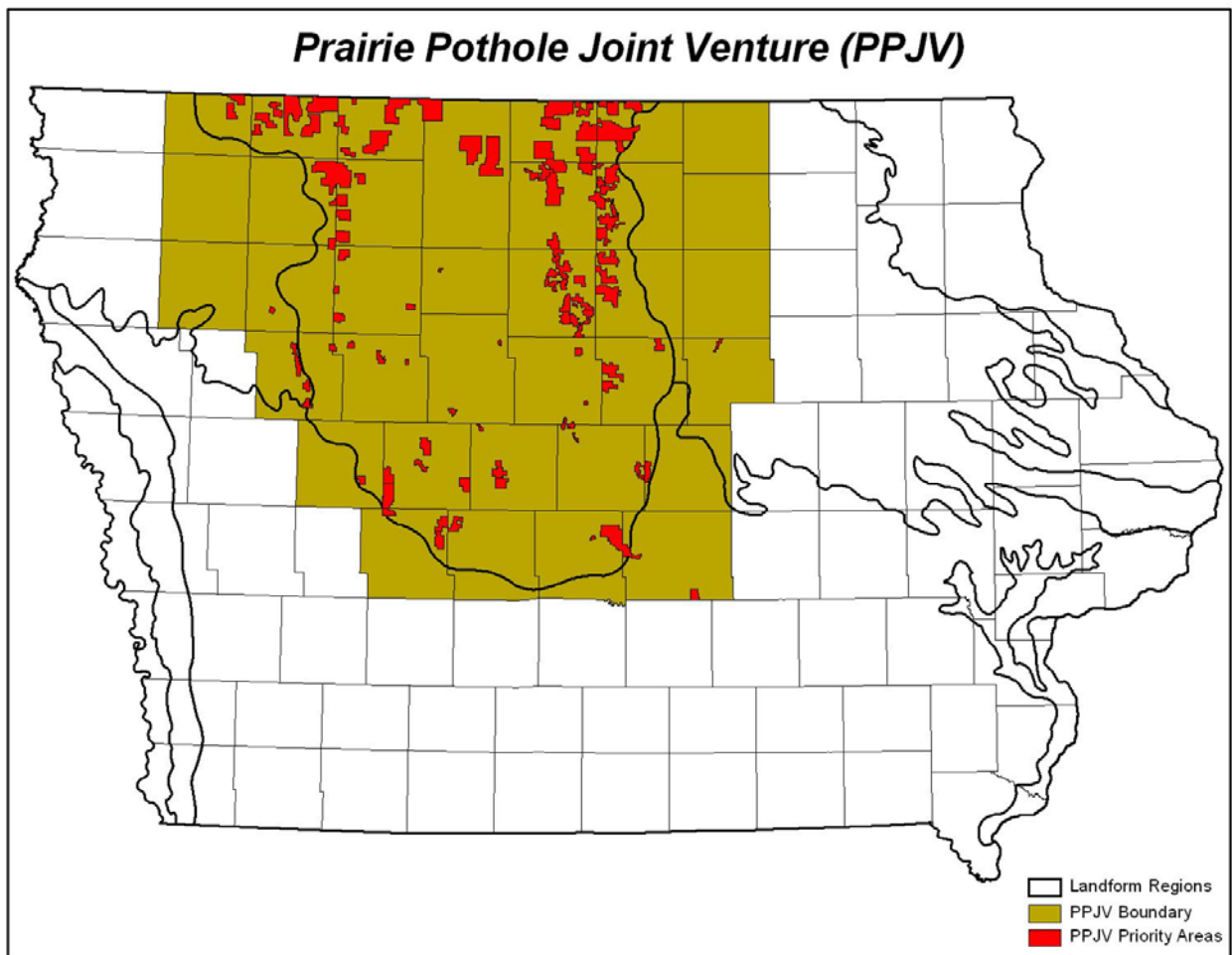
Map 8-8 also shows extensive areas of the state that do not have core habitat blocks to meet the habitat or recreation goals of this Plan. The western third of the Southern Iowa Drift Plain, the southern Loess Hills, the NW Iowa Plain and the southwestern portion of the Des Moines Lobe are notably devoid of these areas. Smaller geographic areas without permanently protected conservation lands can be found in all the other landforms as well.

Not all habitat protection efforts can be vested in acquiring large core blocks of habitat. Once the distribution of more SGCN is better understood, key smaller tracts of habitat may be identified that are required for the protection of exceptionally imperiled SGCN. Connectivity needs to be established between large core areas that are isolated from other tracts. A more dispersed approach may be needed to protect target watersheds and aquatic SGCN than concentrating efforts in one location. These decisions need to be made on a case-by-case basis.

Coordination with other wildlife and biodiversity conservation plans prepared by natural resource agencies and private conservation organizations should be a high priority. Prioritization criteria used by these organizations differ and may include different classes of species or different regional boundaries. Their cumulative site priorities are important in identifying significant locations for future habitat protection actions through partnerships (Maps 8-9 through 8-15).

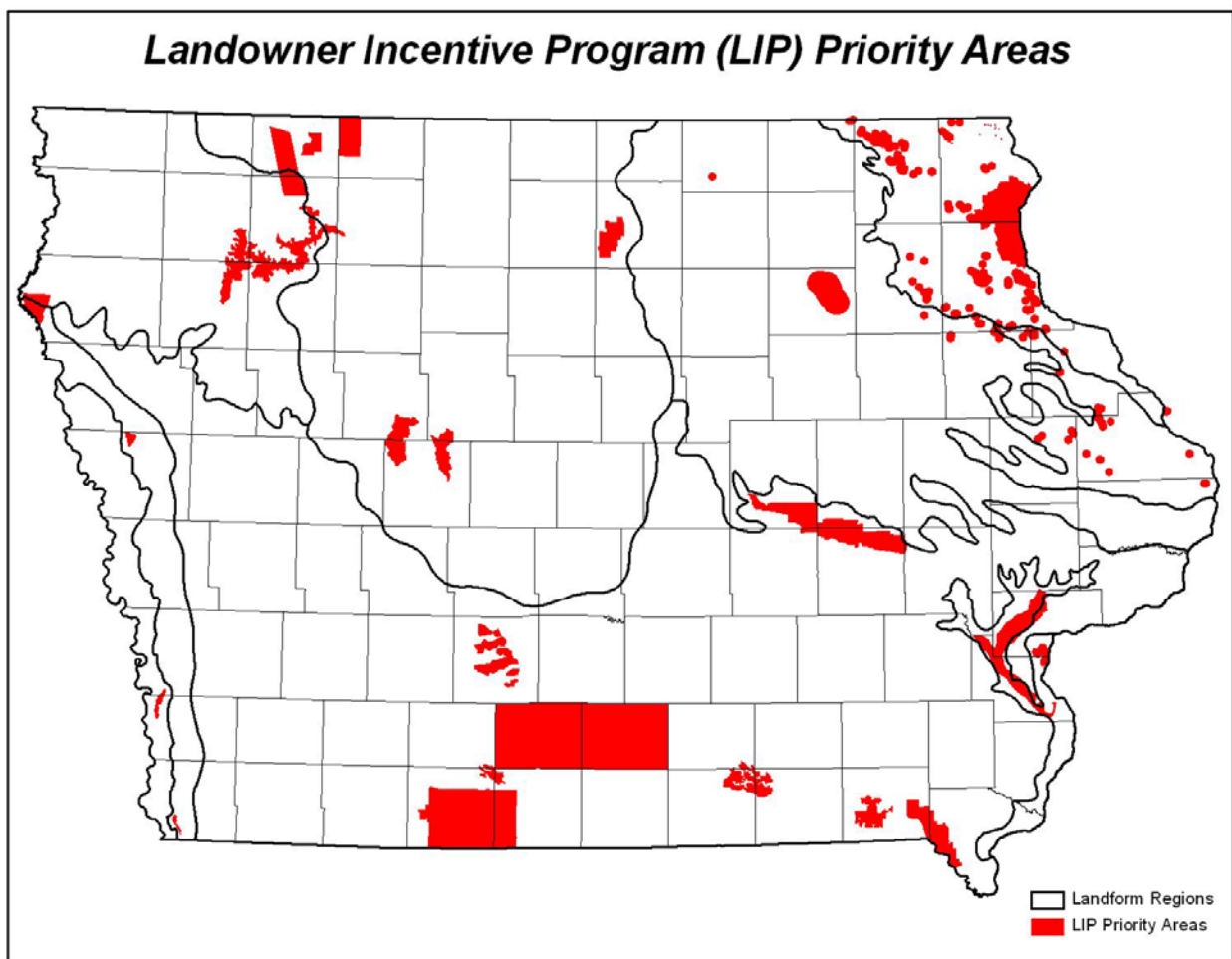
The **Prairie Pothole Joint Venture** of the North American Waterfowl Management Plan is an effort by government agencies and conservation organizations to protect and restore waterfowl habitat within the Prairie Pothole Region of the United States and Canada. Existing and restorable wetland complexes within the Prairie Pothole Region of Iowa have been identified and are shown on Map 8-8. Although initially targeted at waterfowl species, emphasis within the Prairie Pothole joint Venture has been extended to nongame species as well. Research sponsored by IDNR and Iowa State University has demonstrated that a variety of birds and other SGCN have successfully re-colonized these restored habitats.

**Map 8-9. Prairie Pothole Joint Venture Priority Wetland Complexes**



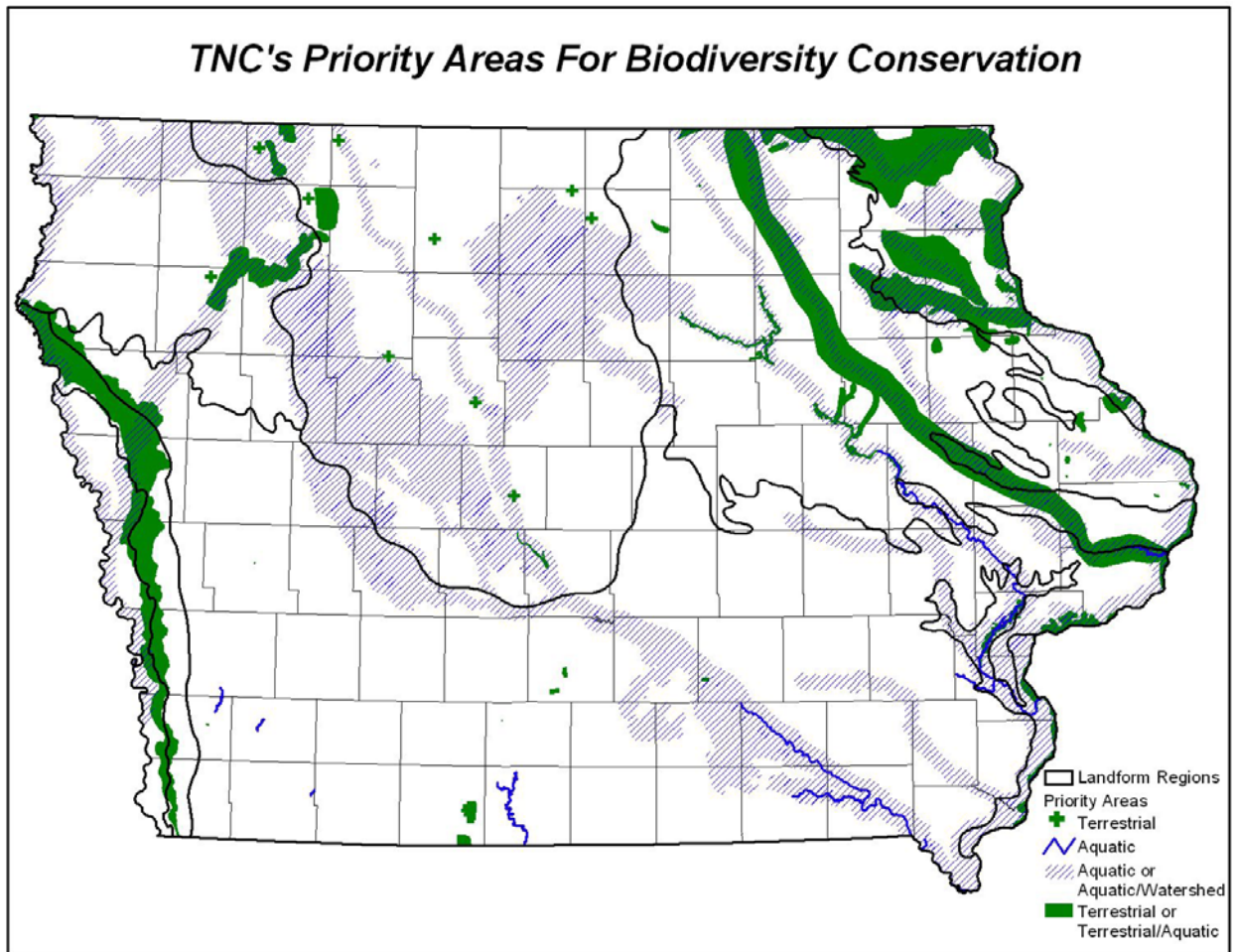
The **Landowner Incentive Program** is designed to protect and restore habitat for state and federally listed endangered and threatened plant and animal species on private lands (Map 8-9). The program provides financial incentives and educational materials to private landowners that are willing to participate in the program. Scientists knowledgeable about Iowa's Threatened and Endangered species have established site priorities. The identified sites include known and potential habitats for endangered and threatened species. Although targeted specifically at listed species, habitat work in these areas would also benefit SGCN that utilize similar habitats.

**Map 8-10. Landowner Incentive Program Site Priorities**



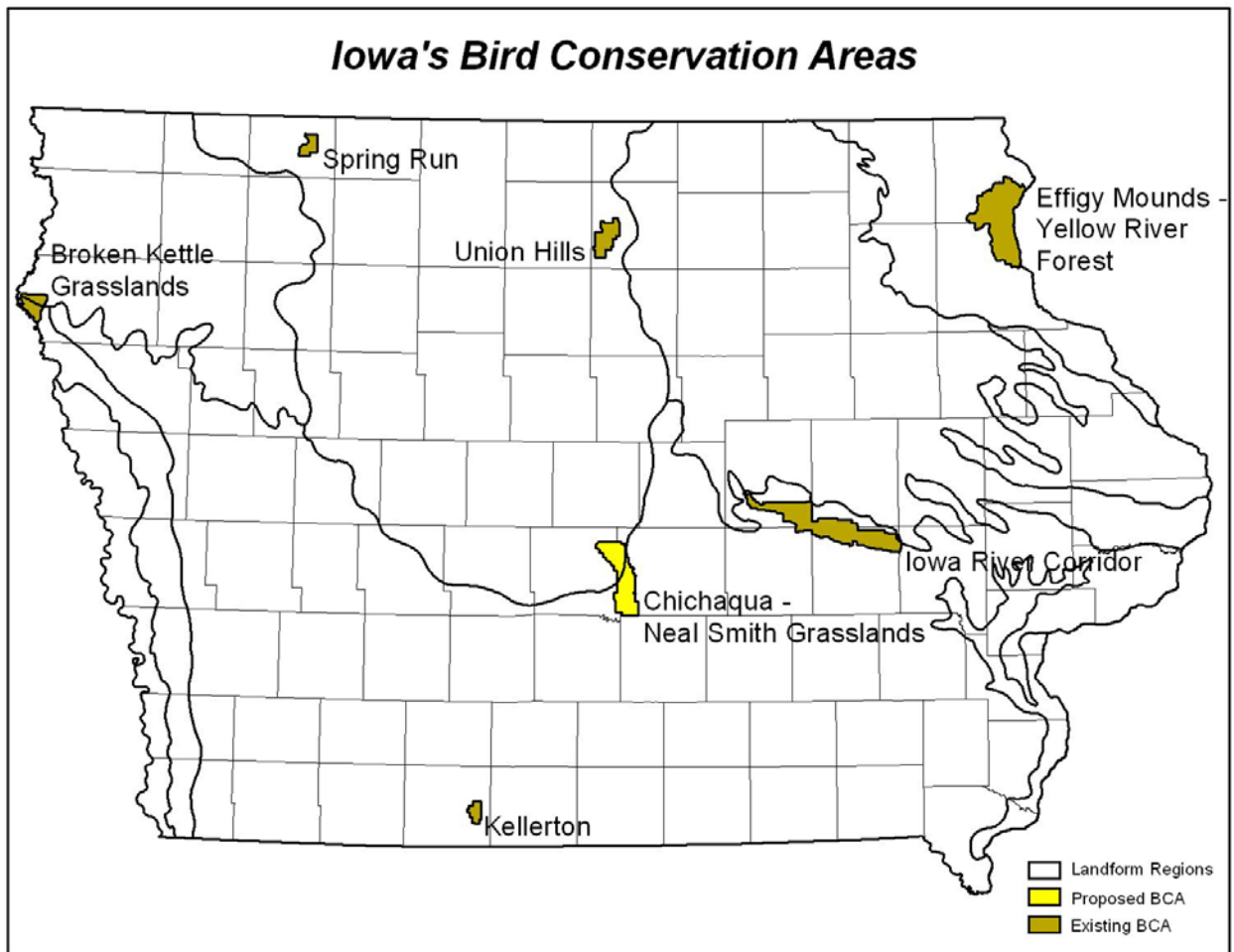
**The Nature Conservancy's Priority Conservation Areas** designate significant natural areas targeted by TNC for conducting biodiversity conservation (Map 8-11). These sites were identified through analyses of plant, animal, and natural community data, along with other information. They also show where this important conservation organization may be willing to partner in conservation actions that may be identified in this Plan.

**Map 8-11. The Nature Conservancy's Priority Conservation Areas**



**Bird Conservation Areas** (Map 8-12) have been designated by IDNR as significant habitat complexes for birds generally following guidelines established by Partners-in-Flight. They are areas of 10,000 acres or more made up of a core area of permanently protected natural habitat surrounded by a matrix of public and private natural lands. While targeted specifically at birds, large tracts of natural habitat such as these have been identified throughout this Plan as providing significant habitat protection and restoration potential for SGCN.

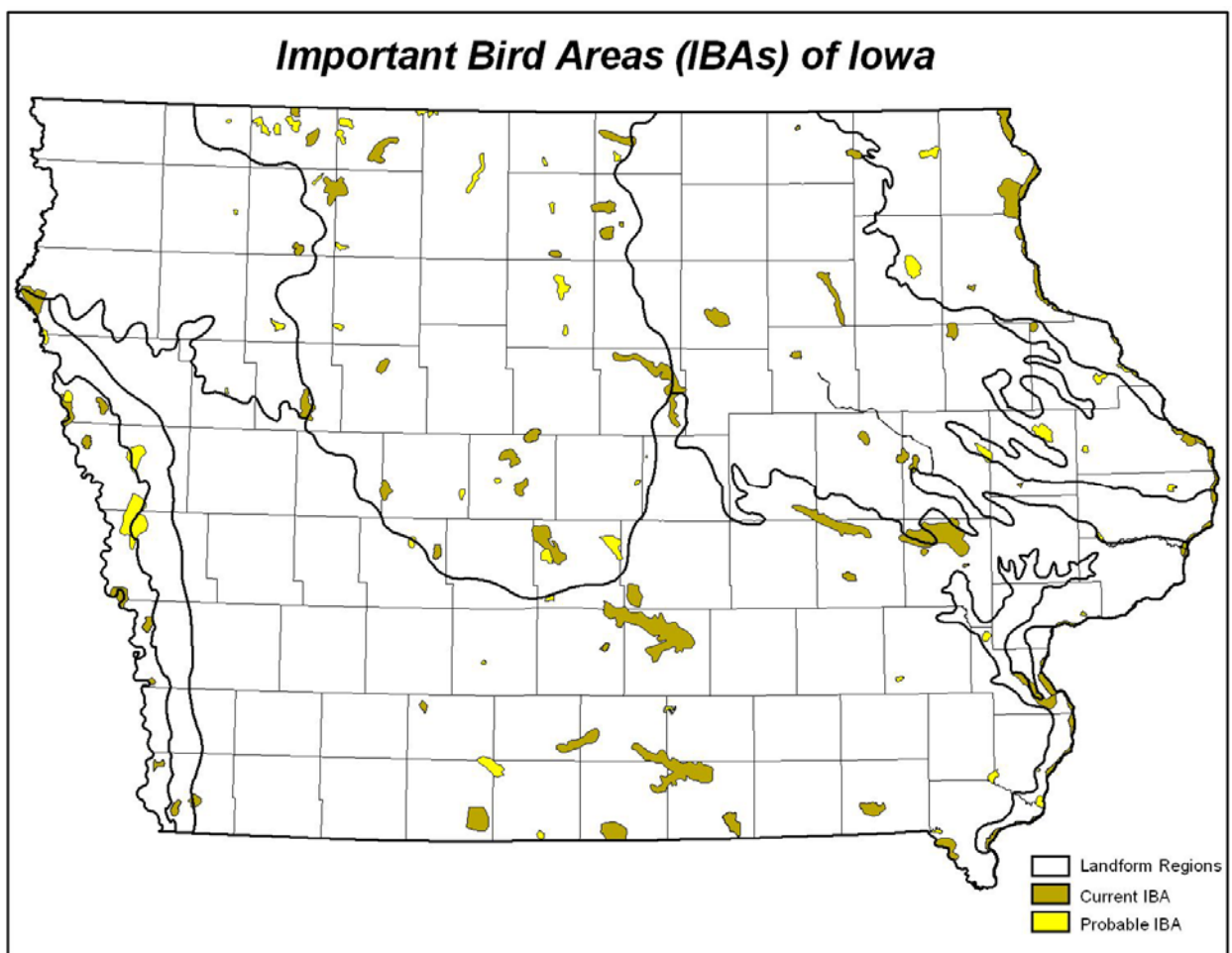
**Map 8-12. Existing and Proposed Bird Conservation Areas**



**Iowa Audubon's Important Bird Areas (IBA)** Program is a citizen-led, science-based and data-driven bird conservation initiative. Phase I of this long-term effort is the identification, recognition and prioritization of habitats that support the most seriously declining species of birds. A State IBA Technical Committee evaluated all data received on a habitat-by-habitat basis, and then voted to confer IBA recognition when criteria were met. Habitats that meet criteria are considered to be the most essential habitats. A total of 70 IBA's in 55 counties have been officially recognized in Iowa (Map 8-13) and 130 additional habitats have been nominated

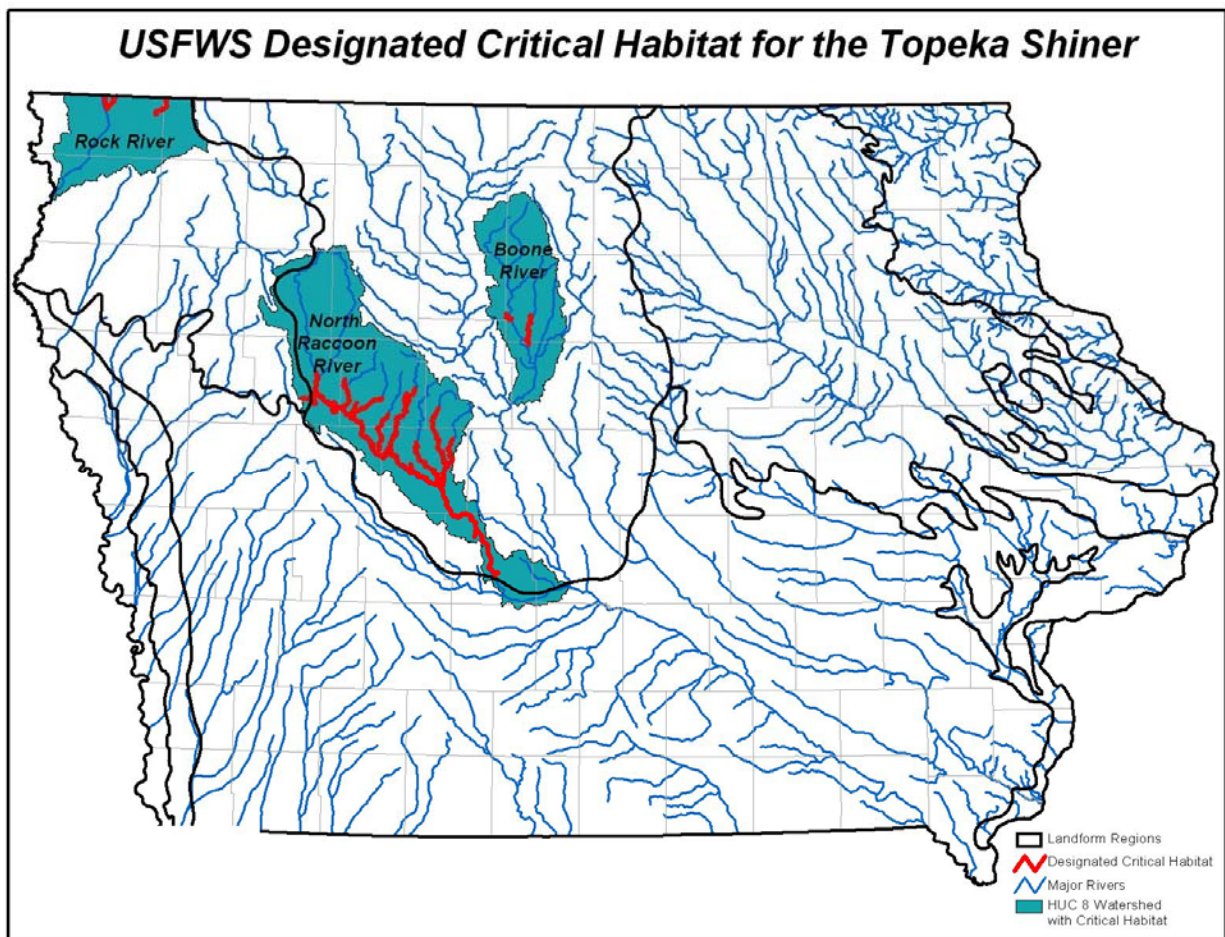
Phase 2 of the IBA Program is long-term monitoring of bird populations and habitat conditions, and organizing education programs at designated IBA sites where appropriate. Phase 3 is working with landowners and land managers to develop and implement long-term conservation plans to protect, restore, enhance and manage IBAs according to their environmental threats and conservation needs.

**Map 8-13. Iowa Audubon's Important Bird Areas**



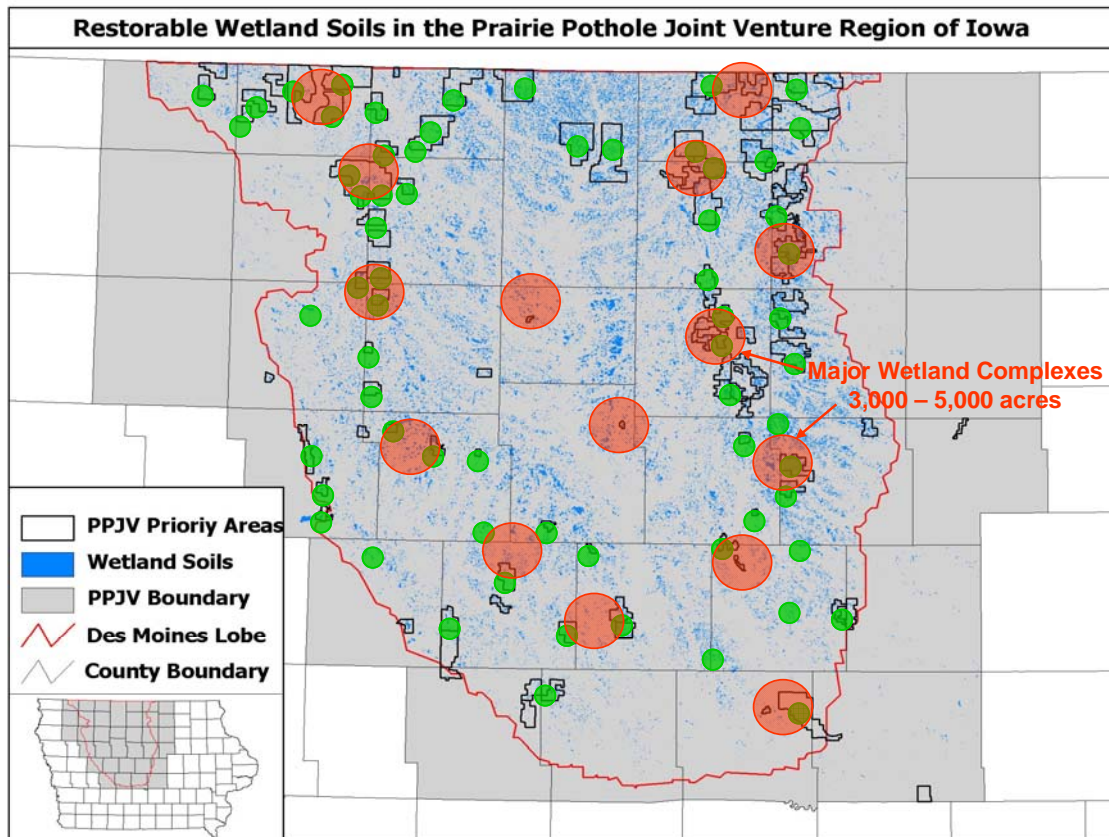
The **Topeka Shiner**, *Notropis topeka*, is a federally listed threatened species of minnow. Map 8-14 shows known and potential critical habitat for Topeka Shiners in Iowa. This habitat is essential for the conservation of the Topeka Shiner and may require special management and protection. All indicated areas designated as critical habitat are occupied by the species or are short segments that provide critical links between habitats. An area is designated as critical habitat through the federal regulatory process. The designation does not set up a preserve or refuge and has no specific regulatory impact on landowners' actions on lands that do not involve federal agency funds, authorization, or permits. Although this map designates critical habitat for only a single species, it can be used to help set priorities for conservation actions in this part of the state.

**Map 8-14. Topeka Shiner Critical Habitat**



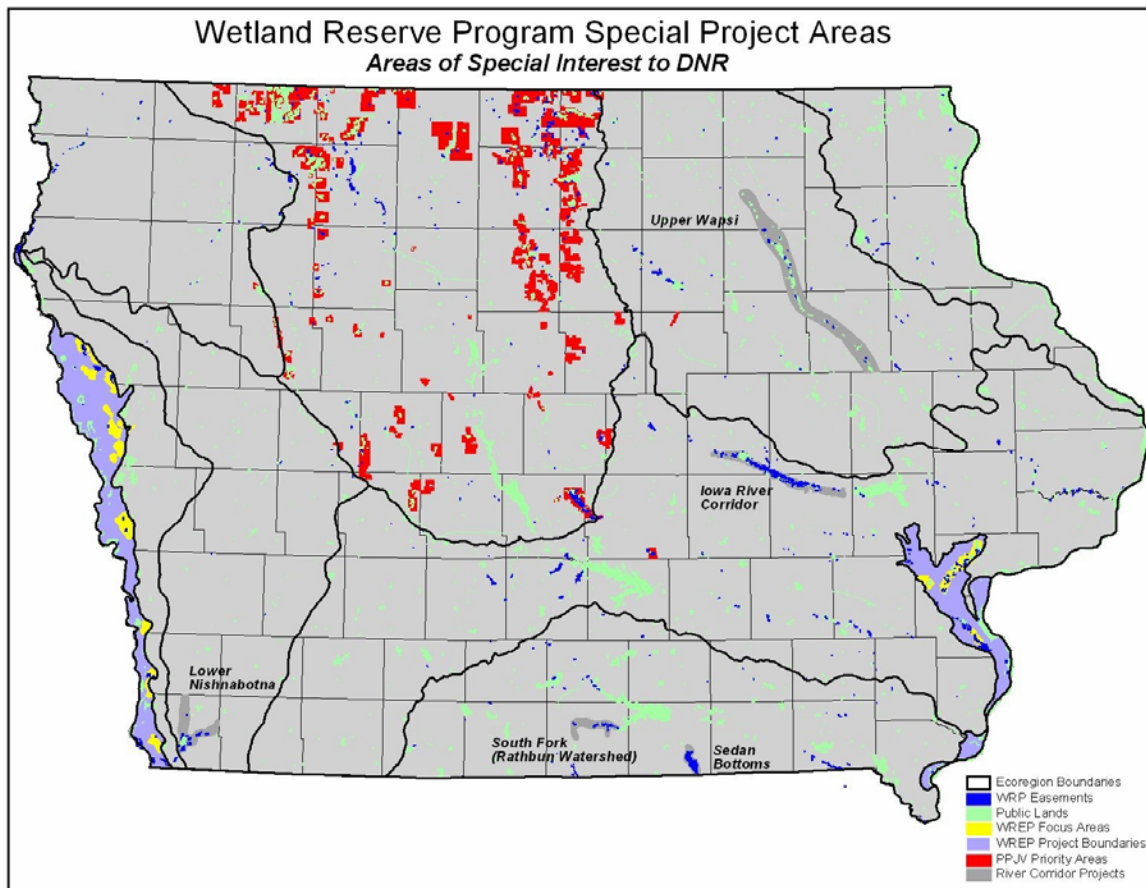
**Migration Stepping Stones Across Iowa** is a proposal by IDNR, USFWS and DU to provide high-quality feeding and resting areas for migratory birds as they cross the intensively farmed Des Moines lobe. Recent research suggests migrating waterfowl are losing weight as they cross the Upper Midwest because of the lack of adequate food and they arrive on their Canadian breeding grounds in poor condition for nesting. This proposal would provide 3,000 - 5,000 acre wetland complexes at less than 75-mile intervals so that birds can move at a more leisurely pace and maintain their body condition.

**Map 8-15. Migration Habitat Across Northern Iowa**



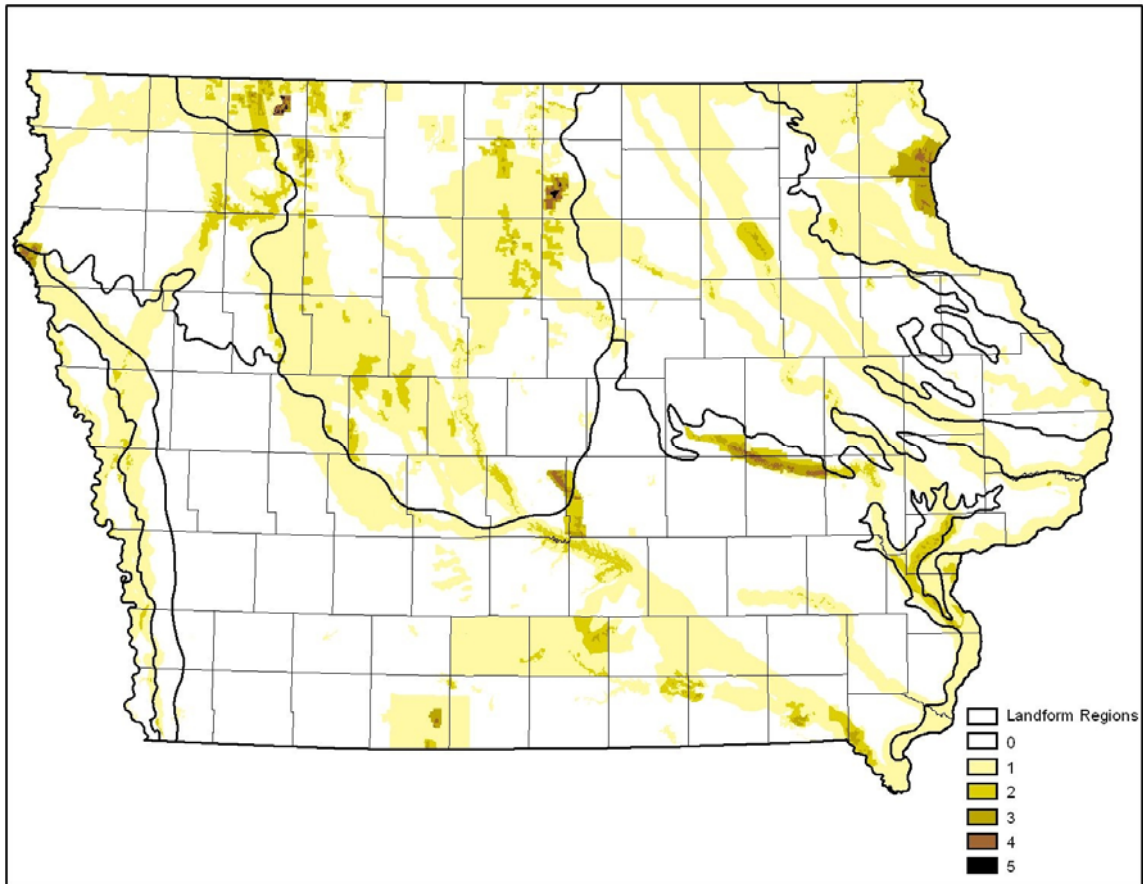
Major flooding that covered Iowa and the Midwest in 1993 led to the passage of the Federal **Wetland Reserve** Act designed to get development and agriculture out of areas prone to flood and return them to their original wetland condition. IDNR in cooperation with NRCS and NGO partners have been able to acquire permanent easements on 100,000 acres in Iowa. Map 8-16 identifies areas IDNR is working with landowners to enroll lands in WRP and acquire their residual value so that these lands will be managed for wildlife.

**Map 8-16. WRP Special Project Areas**



Maps 8-9 through 8-14 were combined to identify **priority areas for conservation actions** (Map 8-17). The shaded areas on the map indicate areas identified as a priority for action by one or more of the plans referenced above. Darker shading indicates areas where progressively more of the plans have overlapping priorities and indicate where partnering to maximize the effect of resources should be possible.

**Map 8-17. High Priority Areas for Cooperative Conservation Actions**



**Goal: Protected habitats will be diverse, representative, native plant communities in large and small blocks on public and privately-owned land and water.**

While most terrestrial and aquatic habitat classes occur in every region of the state, certain habitat classes were historically more prevalent in specific landforms. Habitat-oriented conservation actions aimed at SGCN should primarily protect, restore, and enhance native habitats and native SGCN. Priority habitat classes by region are shown in Table 8-1.

<b>PRIORITY HABITAT CLASS</b>		
<b>LANDFORM</b>	<b>TERRESTRIAL</b>	<b>AQUATIC</b>
Northwest Iowa Plains	Herbaceous Warm Season Herbaceous Wetlands	Streams
Des Moines Lobe - Uplands	Herbaceous Warm Season - Herbaceous Wetlands	Natural lakes - Herbaceous Wetlands
Des Moines Lobe - Riparian River Corridors	Deciduous Forest (Uplands) Wet Forest (Floodplains)	Rivers, oxbows
Iowan Surface - Uplands	Herbaceous Warm Season Herbaceous Wetlands	Rivers & Streams
Iowan Surface - Riparian	Wet Forest	Rivers & Streams
Paleozoic Plateau - Slopes	Deciduous Forest Warm Season Herbaceous (Goat prairies)	Cold water streams
Paleozoic Plateau - Riparian	Wet Forest	Oxbows Backwaters
Missouri Alluvial Plain	Wet Forest	Missouri River Channel Oxbows
Loess Hills	Herbaceous Warm Season (northern one-third) Forest (southern two-thirds)	Streams
Southern Iowa Drift Plain	Savanna Warm Season Herbaceous Shrublands	Rivers- streams threatened by straightening & erosion, Ponds, Man-made lakes
Mississippi Alluvial Plain	Wet Forest	Large rivers, Backwaters

Habitat protection and management decision-makers, however, must be realistic in assessing changes that have occurred since pre-settlement times. Many native habitats have been displaced from their original sites. The Loess Hills is a primary example where forests have supplanted the native prairies that were originally maintained by fire. Forest-dwelling wildlife communities have replaced the original prairie species over most of the southern two-thirds of the Hills. Some of these forest birds are also on the list of SGCN. The human

population of western Iowa has embraced the hills in their current condition and many of the forested acres are held privately as wooded home sites. Any attempt to revert the entire Loess Hills back to prairie would likely meet with intense opposition. Concentrating large-scale prairie restoration and management in the northern Loess Hills seems the best approach. Small-scale prairies can be maintained in the southern Hills to provide biodiversity to otherwise primarily wooded habitats.

**Management Vision: Diverse wildlife communities will be developed on public and private lands and waters through the use of adaptive ecological management principles.**

**Goal: Wildlife management will be based on science.**

Strategies within this vision stress educated partners working together. Conservation actions adopted as part of the IWAP should be based on the best available science. The lack of specific knowledge about the abundance and distribution of SGCN has been mentioned several times (see Chapter 7). Too frequently land management actions are implemented without intent or regard for the possibility of evaluation. Better communication must be developed between wildlife scientists, the staffs of government land management agencies at all levels, public land managers, and private landowners to assure that an adaptive approach is built into land management decisions.

**Recreation Vision: More Iowans will participate in wildlife-associated recreation, and all Iowans will have access to publicly owned recreation areas to enjoy wildlife in its many forms.**

**Goal: The number of Iowans participating in wildlife-associated recreation (wildlife viewing, hunting, fishing, photography, hiking, outdoor classrooms, etc.) will increase 50 percent by 2030.**

The 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation in Iowa estimates that in 2001 there were 690,000 resident anglers, 236,000 resident hunters, and 1,129,000 resident wildlife watchers six years of age and older in Iowa. Residents who view and utilize the wildlife resource will be more open to protecting that resource. A broad and expanded base of support is needed to help insure that wildlife and habitat management and protection efforts receive adequate funding.

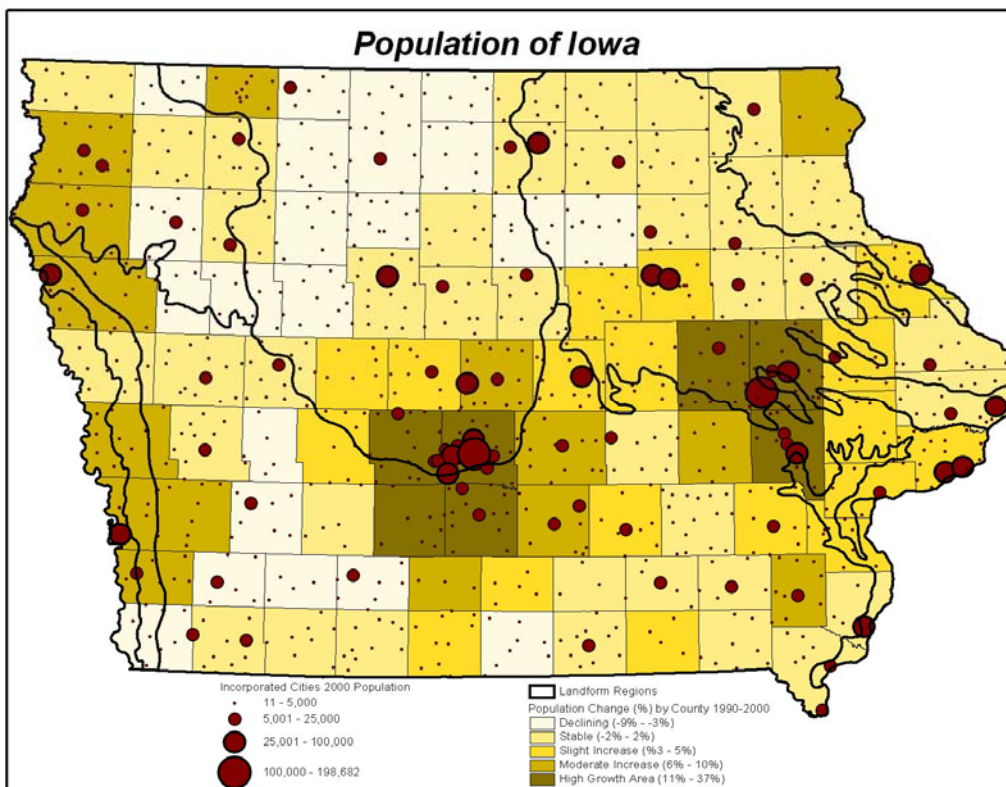
**Goal: Wildlife-associated recreation will be available to all lowans on public lands near their home.**

In a culture where time for leisure activities is limited, new participants in wildlife -associated recreation will need to find public lands on which to recreate close to home. While all lowans deserve access to quality natural areas, the first priority should be given to acquiring and protecting public natural areas close to larger population centers. This will create an appreciation for wildlife-associated recreation among the greatest number of citizens in the early stages of the 25-year effort and generate the support needed completing the Plan. Major populations centers in Iowa are shown in Map 8-18. The distribution of existing public lands is shown in Map 8- 19.

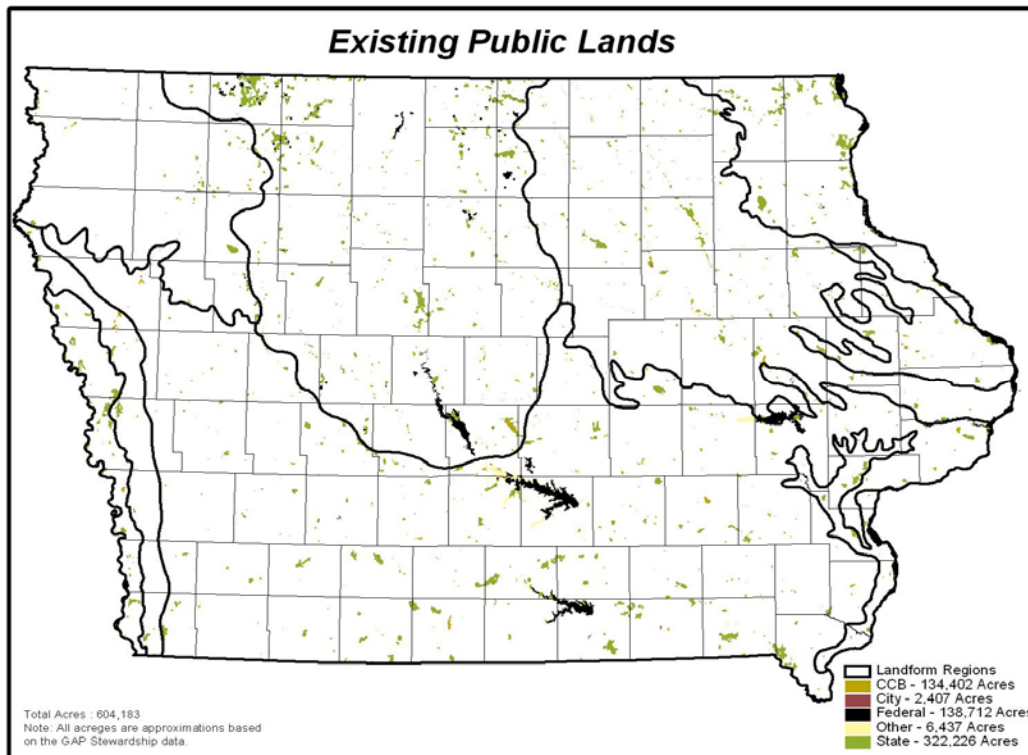
**Goal: Increasing wildlife-associated recreation will improve public health.**

Priority should be given to promoting the health benefits to young and old of wildlife-associated recreation.

**Map 8-18. Distribution of Iowa's Human Population**



**Map 8-19. Distribution of Existing Public Lands**



**Education Vision:** Iowans will respect wildlife for its many values and they will advocate effectively for conservation of wildlife and wildlife habitats.

**Goal:** Iowans will understand the relationships between land use, wildlife diversity and abundance, the quality of life for all citizens, and the positive effects wildlife has on Iowa's economy.

The conservation actions proposed to implement this vision incorporate national standards proposed by the International Association of Fish and Wildlife Agencies. Priority should be given to educational programs that effectively reach the most people at the least expense. Electronic communication such as the use of the Internet and television can be used to reach every corner of the state, and include urban and rural residents alike.

Focused messages must be developed to encourage participation in wildlife-associated recreation and to develop support for expanded funding. Targeting first time participants with outdoor skills information will be important.

**Funding Vision:** Stable, permanent funding will be dedicated to the management of wildlife at a level adequate to achieve the visions of this plan.

**Goal:** Government (Federal, state, and county) and private conservation spending will be increased so that the goals of this Plan are reached by 2030. Funding will be dependable, secure, and appreciated as a powerful economic and social investment.

Of the six vision statements, reaching the Funding Vision goal is the highest priority. None of the other visions can be implemented in anything near the 25-year time frame without increased funding. An estimate of the costs for implementing the IWAP is included in Chapter 10.

No single conservation organization or stakeholder group has the power to attain the necessary funding on their own. An effort comparable to the coalition that has lobbied for Teaming With Wildlife and the Conservation and Reinvestment Act but vastly broadened to include all potential stakeholders will be necessary. A grass roots coalition of wildlife enthusiasts of all types - birdwatchers, bird feeders, hikers, back packers, hunters, anglers, photographers, etc. - is a start, but it should also include local government leaders whose communities stand to benefit from increased recreation revenues and improved quality of life. Only a broad-based coalition will have the strength necessary to obtain funding.

Lobbying must be done at the Federal level to convince Congress to supply basic funding to the states equivalent to the \$350 million targeted in the Conservation and Reinvestment Act. Lobbying at the state level will be essential to obtain whatever level of non-Federal matching funds will be mandated by Congress.

# CHAPTER NINE

## PLAN COORDINATION, IMPLEMENTATION AND REVIEW

### Plan Coordination

Consultation was held with numerous government and private conservation organizations in the development of the IWAP - directly through their participation in the planning or reviews process or indirectly through review of wildlife conservation plans they had developed that included Iowa's SGCN. A review of public participation was included in the *Planning Process* section in Chapter 1. Other governmental or NGO members of the Steering Committee are listed in Table 1-2; members of Working Groups in Table 1-3, and members of the Advisory Group in Appendix 2-1. Strategic and operational plans and websites of other organizations consulted are listed in Appendix 20.

Guidance on Plan content and preparation was received from the U.S. Fish and Wildlife Service, the International Association of Fish and Wildlife Agencies, and the National Advisory Acceptance Team (NAAT). National Plan coordination meetings were attended by Iowa DNR staff in 2003 (Mesa AZ and Madison WI). The *One Year Out* conference held in Nebraska in 2004 was especially helpful. An interstate coordination meeting between representatives from Iowa, Missouri and Kansas was held early in the planning process to help identify interstate implementation efforts. A Plan status meeting with USFWS staff in February of 2005 and an early review of a Plan draft by USFWS staff also helped focus development of the final Plan.

### Plan Implementation

*The discussion in this section assumes that full funding for the IWAP (see Chapter 10) will be available or at least substantial funding to accomplish the major conservation actions that are described.*

No single entity – government conservation agency, private conservation organization or research institution – can implement all conservation actions in this Plan even if full funding is achieved. To access all the energy, expertise and enthusiasm that will be needed an *IWAP Implementation Team* should be formed with representatives from all stakeholder organizations. Identifying an Implementation Team chairperson, solicitation of team members and coordination of its activities should be vested in IDNR as the statutory agency responsible for managing the state's wildlife resources. Team members should

represent state, Federal, county and local government wildlife and land management agencies and conservation organizations (see Interagency Cooperation below). Team members should have sufficient authority to speak for their agency or organization and be able to commit resources to carry out agreed-upon actions.

The purpose of the Implementation Team will be to coordinate to the extent possible the many actions of government agencies at all levels that impact wildlife and its habitats in Iowa. A list of those agencies that have had input into Plan development or should be included in Plan implementation is provided below. Creation of the Implementation Team is not intended to add another layer of bureaucracy or usurp the statutory authority, budget authority, or mission of any agency or NGO that seeks to improve the status of Iowa's wildlife. Cooperation with the IWCAP should be completely voluntary. Once formed, the Implementation Team should establish its own mission, operating procedures and schedules. The following is a suggestion for team members to consider as they decide how they will function.

The mission of the Implementation Team should be to identify common interests, solidify working agreements, and focus members on conservation actions that meet the goals of the IWAP in the most financially efficient and timely manner possible. The Implementation Team's responsibilities should include:

- Identify permanent or short term Working Teams to implement the vision elements and conservation actions outlined in this Plan;
- Develop general assignments for Working Teams, reporting procedures and schedules;
- Review recommendations and priorities established by Working Teams for conservation actions and funding;
- Coordinate activities of the Implementation Team members to accomplish agreed-upon conservation actions;
- Review progress toward IWAP visions, goals, and actions; identify barriers to progress and seek solutions that cross agency and organization lines. The Implementation Team may initially have to meet regularly; but after the desired level of cooperation and action is reached it should meet at least annually to review progress and solve problems that may arise.

*Working Teams* will provide the level of deliberation and expertise necessary to develop operational plans that will fulfill the goals and vision of the IWAP. Members should include wildlife, recreation and outdoor education scientists; land managers, and experts in implementing programs in these fields.

Working Team members should have the technical expertise to:

- Review and explore program and planning options;
- Develop conceptual operational plans for conservation agencies, NGOs and private citizens to participate in;
- Develop and critically review technical proposals;
- Provide peer review for cooperating agencies operating plans;
- Develop conservation action and funding priorities for the Implementation Team to consider;
- Identify strategic and operational Plan shortcomings and recommend improvements.

## **Interagency Cooperation**

Cooperation between agencies and organizations that manage public conservation lands in Iowa (IDNR, Iowa CCB's, USACOE and USFWS) will be essential to the successful implementation of IWAP. All have working relationships at both the state and local levels.

Many of the recommended conservation actions must be carried out on private land. NRCS provides technical assistance to landowners for land conservation projects and FSA provides funding. The IDNR director serves as Chair of the Farm Policy Committee of the International Association of Fish and Wildlife Agencies which advises NRCS and FSA on agriculture and wildlife policy issues and rule making procedures. IDNR has permanent positions on Iowa's USDA State Technical Committee and subcommittees that provide input into wildlife-friendly programs like WRP, CRP, EQUIP and WHIP. NRCS and IDNR cooperatively fund the DNR's Private Lands Program that uses USDA funding to establish wildlife habitat on private land. IDNR Wildlife Biologists are co-located in NRCS offices to promote close interaction between the DNR, NRCS staff and private landowners. All of these avenues will be utilized to promote the concepts and management recommendations identified in this Plan.

Iowa's eastern and western borders are defined by major river systems. IDNR fisheries and wildlife staff are heavily involved with cooperative projects that involve the border rivers - Upper Mississippi River Conservation Committee (UMRCC), UMRCC Fish Technical Committee, Mississippi Interstate Cooperative Resource Association (MICRA), MICRA Paddlefish/Sturgeon Recovery Work Group, Fish and Wildlife Work Group, Fish and Wildlife

Interagency Committee, Upper Mississippi River National Wildlife and Fish Refuge Master Planning, Environmental Management Program (EMP)/Long Term Resource Monitoring (LTRM) Analysis Team, EMP Habitat Rehabilitation and Enhancement Projects (HREP) planning and proposal review, EMP Coordinating Committee, EMP Water Level Management Task Force, Environmental Monitoring and Assessment Program for Great Rivers Ecosystems (EMAP-GRE), and Mississippi River Mussel Coordination Team.

IDNR fisheries personnel are involved with the Missouri River Natural Resources Committee (MRNRC), the MRNRC Fish Technical Committee, Missouri River Mitigation Committee, Master Manual Review Committee, MICRA, MICRA Paddlefish/Sturgeon Recovery Work Group, Missouri River Basin Association (MRBA), MRBA Roundtable, USFWS Fish Passage Grants, and Shallow Water Habitat Committee. They also coordinate fisheries issues with the eight MRB states to develop Missouri River recovery and ecosystem restoration plans

Northeast area Iowa DNR fisheries personnel are working through the Upper Iowa River Alliance to coordinate with the state of Minnesota to test water quality on the Upper Iowa River. Information from this project is used to prioritize Upper Iowa River tributaries for watershed management practices that address impairments discovered in the water testing.

Iowa DNR fisheries research personnel are coordinating shallow lakes management investigations with Minnesota DNR and Wisconsin DNR. Iowa DNR fisheries culture personnel work with drug (fish disease) issues with many state and federal agencies. Iowa DNR staff is represented on the Topeka shiner recovery team that includes representatives from the U.S. Fish and Wildlife Service, National Park Service, SDGFP, Kansas Department of Wildlife and Parks, Minnesota DNR, Missouri Department of Conservation, South Dakota State University, University of Minnesota, and private consultants. Fisheries biologists with Topeka shiner populations in their management areas in Iowa work with the USFWS on critical habitat and habitat restoration on private land.

Aquatic nuisance species (ANS) issues are addressed by Iowa DNR fisheries personnel with support from several partnerships including the Mississippi River Basin Panel on ANS, Asian Carp Management and Control Plan Work Group, Missouri River ANS Work Group, and Midwest Invasive Plant Network.

DNR staff also serves on a number of national and regional committees including the Prairie Pothole Joint Venture Technical Committee and Board, The Upper Mississippi River and Great Lakes Region Joint Venture Board, the Mississippi Flyway Council, Mississippi Flyway Council Technical Section, Midwest Deer and Turkey Study Group, Midwest Furbearer Workshop, Midwest Private Lands Working Group and Midwest Pheasant Council. All provide

opportunities for review of plan activities and integration of conservation actions in other wildlife programs.

Establishing formal communication through inter-state working groups similar to those that exist for many game species (discussed above) could greatly improve implementation of plans for states that have shared wildlife resources.

## **IWAP Review**

If the general outline of activities that is proposed in this Plan is followed, review of the IWAP will occur as follows:

- Achievements will be compiled and made available to the public as individual projects are completed (Chapter 7);
- Work Teams will review operational activities on a continual and ongoing basis;
- The Implementation Team will review activities at least annually;
- Review of the long term wildlife monitoring project will occur at least after 5 years when the initial inventory is complete.
- The Steering Committee recommends that a formal review of the entire IWAP should take place after no more than 10 years or oftener if desired by the Implementation Team.

The 10-year review should be as thorough as the original planning process. It should include a review of achievements, the status of all of Iowa's wildlife and its habitats, stresses that have been resolved or have intensified, the effectiveness of the IWAP in improving the status of Iowa's wildlife, and the public's acceptance of the Plan and its achievements. This review should strengthen the action plan and direct any changes needed to be sure that its visions are implemented in the 25-year time frame.

## Chapter Ten

### The Cost of Sustaining Iowa's Biodiversity

The costs of reaching the goals outlined in this Plan exceed the historic levels of conservation funding in Iowa. Hunters and anglers have funded most wildlife conservation. National and state trends indicate that the number of participants in hunting and fishing is declining. IDNR resident fishing and hunting license sales are decreasing about 1% a year. Approximately 45% fewer Iowans buy hunting licenses today than a generation ago. Total revenues to fund wildlife programs have increased recently because of the rapid increase in deer and wild turkey populations, but that trend is predicted to stabilize or decrease. To reach the goals established in this Plan a broader spectrum of Iowans must share in the funding burden. The Plan contains elements that should more than compensate Iowans for their support in the form of increased recreation, better health, improved quality of life, and improved economic vitality in rural Iowa.

The annual cost to double the amount of permanently protected wildlife habitat by 2030 is estimated to be \$48 million (Table 10-1). Currently \$29.6 million is available from a combination of hunter-angler licenses and excise taxes, Federal wildlife appropriations, Federal water quality appropriations, Federal farm programs, and NGO and CCB activities *if these funds were all dedicated to permanently protecting wildlife habitat*. It also assumes that Congress will fund SWG programs at the level anticipated by CARA and that state matching funds will be made available. That would leave a shortfall of \$18.4 million a year to be raised from other sources.

Additional costs to implement the Plan are listed in the right two columns of Table 10-1. Combining the habitat protection and habitat management, survey and science costs brings the total funding needed to approximately \$40 million annually. For purposes of reference only, the revenues raised from adding a 1/8% sales tax is \$44 million. Many other funding options are available.

**Table 10-1. Cost to Double the Amount of Permanently Protected Conservation Land in Iowa by 2030**

<b>Habitat Protection</b>		<b>Habitat Management &amp; Science</b>	
Acres in Iowa	36,000,000	Public Land Management	\$15,000,000
Acres Protected by 2030	1,250,000	Private Lands Assistance	\$6,000,000
Current Acres Protected	650,000	Education	\$1,500,000
Additional Acres Needed	600,000	Recreation	\$1,500,000
Cost/acre	\$2,000	Science & Monitoring	\$4,000,000
Total Cost	\$1,200,000,000		
<b>Cost/Year</b>	<b>\$48,000,000</b>		<b>\$28,000,000</b>
<b>Existing Sources of Funds</b>		<b>Existing Funds</b>	
<b>Dedicated Funds</b>		Land Management	\$6,000,000
Iowa Habitat Stamp	\$1,600,000	Private Lands Assistance	\$1,000,000
Iowa Migratory Bird Stamp	\$250,000	<b>Total Available</b>	<b>\$7,000,000</b>
REAP License Plates	\$400,000		
<b>Sub-total</b>	<b>\$2,250,000</b>	<b>Annual Shortfall</b>	<b>\$21,000,000</b>
<b>Appropriated Funds</b>			
Federal NAWCA/PPJV	\$2,000,000	<b>New Funds Needed</b>	
Federal NRCS - WRP	\$10,000,000	<b>Habitat Protection</b>	<b>\$18,375,000</b>
Federal SWG	\$375,000	<b>Habitat Manage/Science</b>	<b>\$21,000,000</b>
Federal EPA	\$5,000,000	<b>Total</b>	<b>\$39,375,000</b>
<b>Sub-total</b>	<b>\$17,375,000</b>		
<b>Non-State and Federal Donations</b>			
CCB's	\$2,000,000		
PF/DU/NWTF/TNC	\$2,000,000		
<b>Sub-total</b>	<b>\$4,000,000</b>		
<b>New Sources of Funds</b>			
Federal - New CARA	\$4,500,000		
State Matching	\$1,500,000		
<b>Sub-total</b>	<b>\$6,000,000</b>		
<b>Available Per Year</b>	<b>\$29,625,000</b>		
<b>Annual Shortfall</b>	<b>\$18,375,000</b>		